

# THE IRON AGE

THURSDAY, JULY 11, 1889.

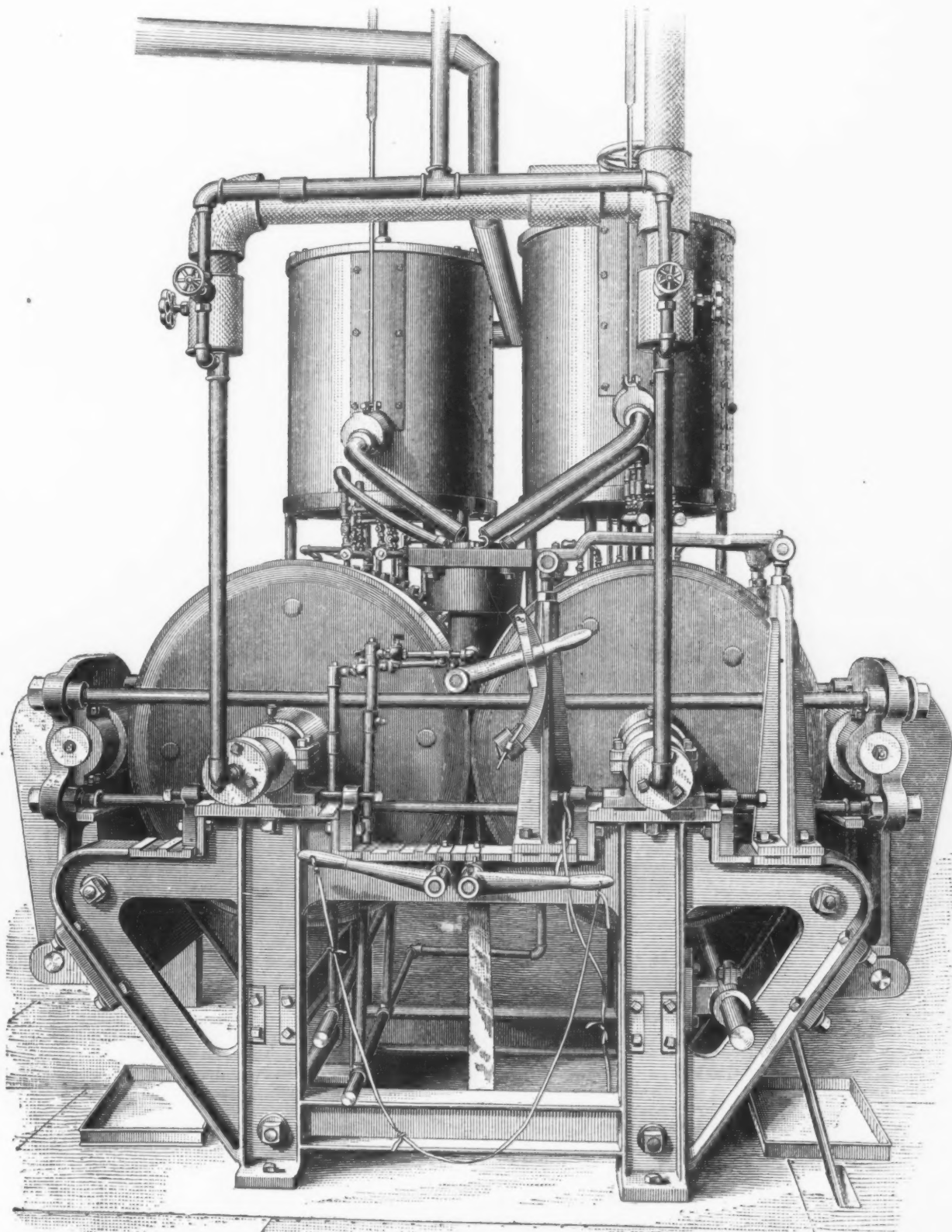
## Rolling Liquid Metal.

The machine of which we herewith present very complete engravings forcibly illustrates the truth of the saying, "Necessity is the mother of invention." In the making of tin cans, as practiced at the works of Norton Brothers, of Chicago, the solder for the caps is a thin ring of metal circling the edge of the body part. To

form this ring, sheets of solder are rolled to the requisite thickness, and from these sheets the rings are stamped. The cost of rolling these sheets was so expensive as to add most materially to the price of the finished can, and stimulated the manufacturer to devise some method whereby this could be overcome. The machine shown does this work perfectly, taking the molten solder, which flows in a wide stream

to and between a pair of rolls, from which it is delivered perfectly smooth, without flaw of any description and absolutely uniform in thickness. As the mills asked from 8 to 10 cents per pound for rolling the solder into sheets of the requisite thickness, it is evident that this machine does away entirely with this item of expense.

A brief outline of the several steps which proceeded and led up to the com-



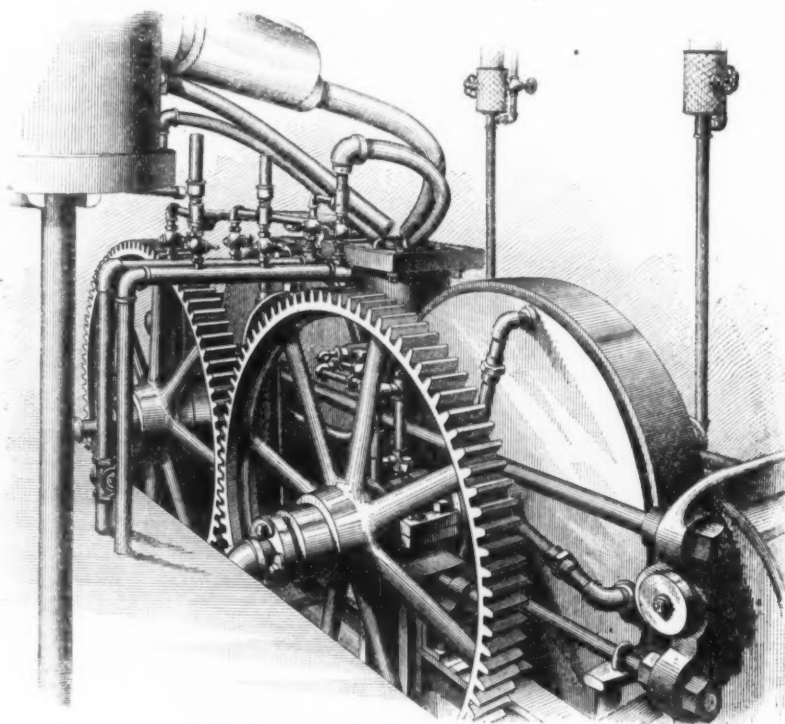
END VIEW OF MACHINE FOR ROLLING LIQUID METAL.

pleted machine will be of interest, because it has always been the dream of the metallurgist to form sheets and even shapes direct from the metal in a liquid state. The first trial was made with one wheel, which was opposed to a smooth surface. This was of course not successful, as it was too nearly allied to the casting process. In the next step of importance wheels revolving toward each other were tried, the liquid metal being poured between their faces, the speed of revolution being regulated according to the thickness of the sheet. Something like a result was obtained by this machine, and the principle of the successful machine was found. Working upon this line, the experiments were continued, until finally with hollow cast-iron wheels, cooled internally with a stream of water forced through them, revolving just fast enough to catch the stream of molten metal without damming it up, and being kept just enough cooler than the molten metal to solidify it, a result satisfactory in every way was reached.

A remarkable feature of the machine is its extreme simplicity. In reality it consists of nothing but two revolving rolls, internally cooled, and between which flows a stream of molten metal. The space between the rolls is of course equal to the thickness of the sheet-metal to be produced. These wheels or rolls have hollow shafts, journaled in the bearings on the frame of the machine. The bearings are made adjustable to permit of the adjustment of the rolls to or from each other according to the thickness of the sheet-metal desired. The openings at one end of the hollow shafts lead into the interior of the rolls at the center and communicate at their outer ends with water-supply pipes, through which the supply is forced. The openings in the opposite end of the hollow shafts communicate through radial branch pipes with the rolls near their peripheries. They are connected to the outlet pipes through suitable packed couplings. By this means the entire interior of the rolls can be kept full of water and a constant circulation maintained. Although the water can be forced in the contrary

feet circulation of water is insured inside the wheel before it can escape. The shafts of the rolls are geared together by spur-wheels as shown in the drawings. Scrapers or clearing devices, consisting of blades of a soft metal like copper, so as not to scratch the surface of

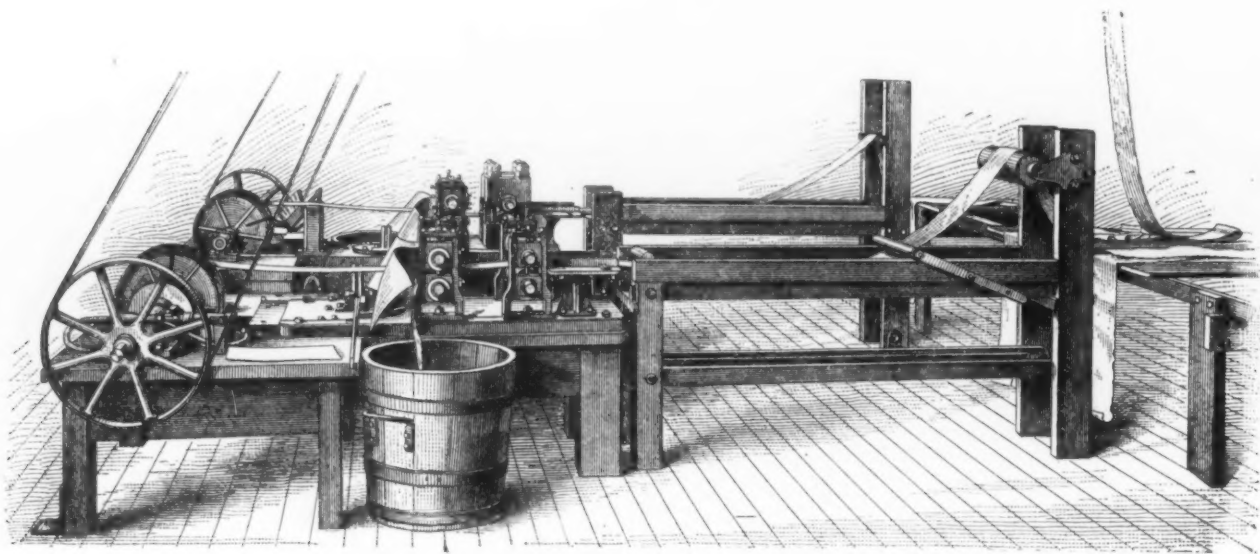
this nozzle is brought down as near the meeting-line of the rolls as possible, so that the stream of metal may have but a short distance to fall after leaving the nozzle. The nozzle is provided with a valve, consisting of a cylindrical plug having a slot through it. The valve-lever



VIEW SHOWING GEARING, CONDUCTORS AND BURNERS.

the rolls, are located just beneath the meeting-line of the rolls in position to strip the sheet-metal from the periphery of each roll in case it should have a tendency to stick. These stripping-blades are mounted on arms attached to handles

is adjusted to any desired position, and is furnished with an arc to afford a means for accurate adjustment of the opening. The lower end of the nozzle is, for convenience as well as for nicety of construction, made in two parts, one being integral



VIEW OF FLOOR BELOW, WHERE THE SHEET-METAL IS RECEIVED.

direction through the pipes, it is better for it to follow the course described, as the movement of the water is aided by the centrifugal action of the revolving wheels, and the incoming cold water is thereby quickly distributed to the periphery of the roll, where it is needed to cool the metallic rim. By locating the inlet and outlet pipes one at the center and the other at the periphery of the rolls a per-

so that they may be adjusted to and from the rolls.

The pouring nozzle has a vertical slot or opening, through which a thin, wide, flat stream of molten metal issues directly between the two rolls, and in a direction tangential to both, so that the stream strikes evenly the periphery of both wheels, and is therefore equally acted upon on both sides. The lower end or mouth of

with the reservoir itself, and the other being secured thereto by set-screws.

The pouring vessel or reservoir is mounted upon an adjustable frame, so that the nozzle may be accurately adjusted in relation to the middle line between the rolls, in order that the stream of metal may be accurately directed into the space beneath the revolving wheels. This is accomplished by mounting the support of



the pouring vessel on four adjusting screws; by turning the nuts on all four of these equally, the mouth of the nozzle may be moved vertically either way without affecting its position in respect to the meeting-line of the wheels. By turning

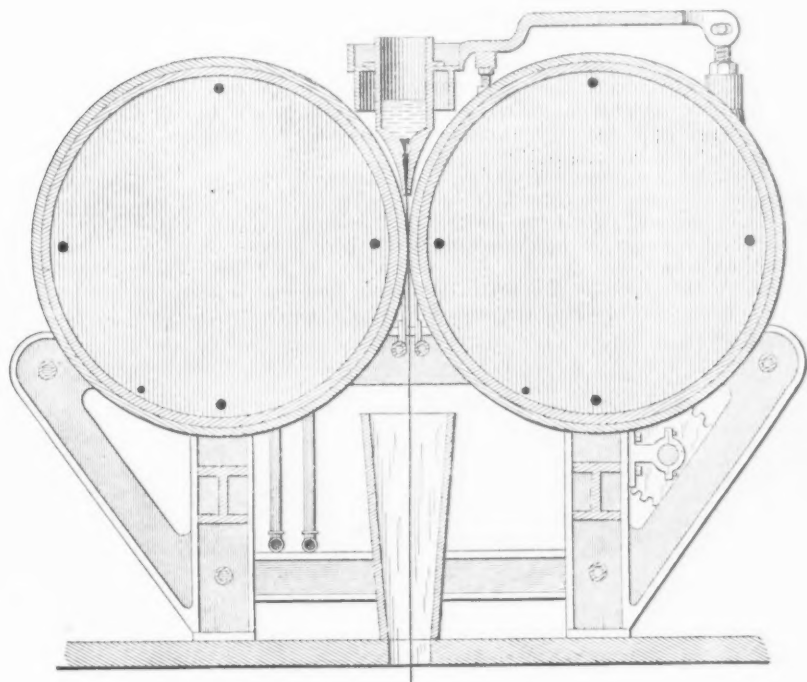
by means of gas-jets. The pouring nozzle, however, is heated by means of gaseous fuel, and the flame may be adjusted directly against the nozzle, which can be kept at the requisite temperature without imparting any great amount of heat to the

paratively large size, so that it may hold a considerable supply. Leading from the crucible to the pouring-nozzle is a pipe, through which the molten metal is conveyed. This pipe is kept hot by means of a series of gas-jets. The crucible outlet is furnished with a valve, by which the supply is controlled. When in operation the metal to be melted is supplied continuously to the crucible as fast as it is drawn through the pipe.

The rolls or wheels are revolved by means of a pulley mounted to one of the shafts. The rolls have smooth, unflanged peripheries, so that any slight inequality or lack of uniformity in the size of the flowing stream of metal will be compensated for at the edges of the strip of sheet-metal produced by variations in the width.

The machine now in operation and from photographs of which our perspective views were made turns out sheets of solder 6 to 18 inches wide and 0.015 of an inch thick, without variation, and at the rate of 400 feet a minute. With this machine two crucibles are used, so that one can be charged afresh while the other is being tapped. The wheels or rolls used have a steel-tire face, but this is not preferred, as it seems to be too soft, leaving a somewhat mottled surface on the sheets. Probably cast-iron rolls, with chilled faces ground perfectly smooth, or hard steel rails ground smooth, would be better. The rolls can be made of much greater width to suit the purpose for which they are intended.

As the surfaces of the rolls are traveling away from the mouth of the nozzle at an equal or greater speed than the velocity of the flowing metal with which they come in contact, the revolving wheels tend to facilitate the flowing metal, and in a measure to draw it from the nozzle rather than to in any



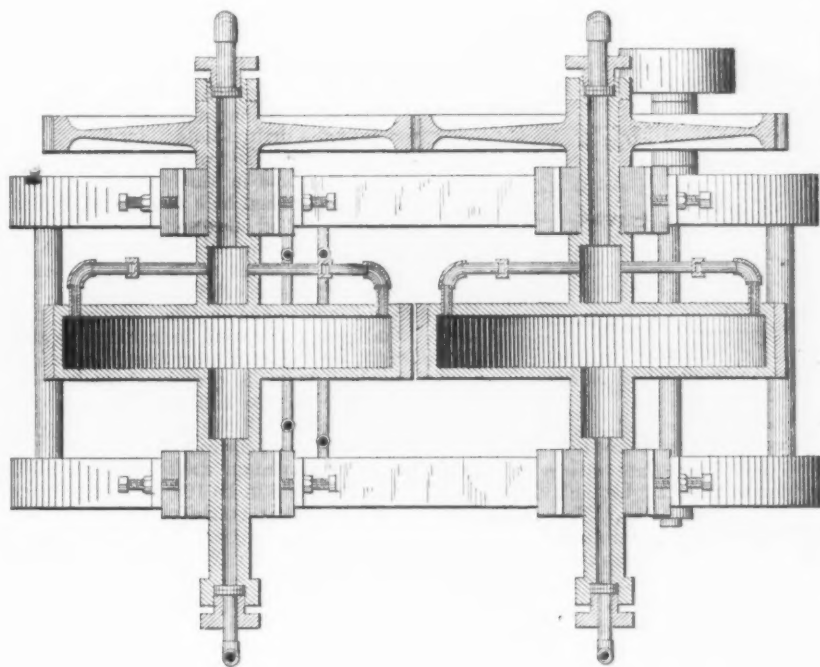
SECTION AT RIGHT ANGLES TO ROLLS.

the nuts of the two screws on one side, one corner of the nozzle may be tilted up or down or brought nearer or further from a horizontal plane passing through the axes of the rolls. By turning the

rolls. By combining gas burning heaters with the pouring nozzle and the revolving rolls, the important result of bringing the pouring nozzle well down by the revolving wheels is accomplished. One of the



Section through Nozzle.



PLAN VIEW OF MACHINE.

outer or inner end pair of nuts—that is to say, the two further from the vessel or the two nearer—the mouth of the pouring nozzle may be adjusted nearer to one wheel or the other, as may be necessary to bring it accurately to the middle line.

The pouring vessel is heated, and the metal therein kept in a molten condition

gas-burners is located very near the lower end of the pouring vessel at each of its edges. In order to concentrate the flame upon the pouring vessel, it is provided with a hood, which also serves in part to shield and protect the wheels from the heat.

The crucible of the heating vessel in which the metal is melted is made of com-

way obstruct the flow of the stream. As the peripheries of the wheels do not come in contact with the wide, thin, flat stream of metal except at their meeting-point and at the very instant it is changing from a liquid to a solid state, the passing stream of metal exerts little or no spreading force upon the wheels to force them apart and thereby to increase or vary the distance between them, and tend to cause variation in the thickness of the sheet-metal produced, as would necessarily be the case if the rolls were subject to violent and varying strains. For this reason also it requires very little power to run the machine at any desired velocity. Owing also to the very limited portion of the periphery of the wheels which at any instant is in contact with the molten metal and receiving heat therefrom, the temperature of the wheel is easily kept uniform and at any desired degree.

The length of the rolls may be increased or diminished according to the width of the metal sheet desired.

The wheel in the drawing herewith is comparatively small, as the machine was designed especially for the manufacture of narrow sheet-strip solder. The length of the slot in the nozzle is about equal to the width of the strip of sheet-metal to be produced. As the rolls have unflanged peripheries, as above stated, strips of sheet-metal of any desired width, from the narrowest up to the full length of the rolls, may be made on the same machine by simply regulating the width and thickness of the stream of metal and the velocity of the revolving wheels.

The sheet solder from the rolls passes to the room below, an engraving of which is herewith shown, where the belt-carrier takes the sheet, carries it over and drops

it on a bench, where a boy piles it up with a stick as it cools. It is then taken to the trimming machines, of which there are two, and which have to be run to their full capacity in order to keep up with the rolling machine. Here the edges of the sheet are trimmed as it is drawn by power between knives. It is then rolled on spools ready to be carried to the cutting-room. No skilled labor is employed in operating the machine. Three boys handle it without trouble.

Many attempts have been made to produce sheet-metal by pouring molten metal in a flat stream upon the surface of a rapidly-revolving wheel, the rim of which was hollow and filled with water to keep the wheel cool, so that it will solidify the stream of metal as it comes in contact with it. In the practical operation of this method, however, great difficulty has been found in producing the same smooth

oughly at the can works of Norton Brothers, which is the largest establishment of its kind in the world. The machine is controlled by the Norton Fluid Metal Rolling Company, whose address is 46 River street, Chicago, Ill.

#### Drifting Tests of Steel.

From *Engineering News* we take the accompanying cuts and description furnished that journal by A. C. Cunningham, of Pittsburgh, inspector with G. W. G. Ferris & Co., who says:

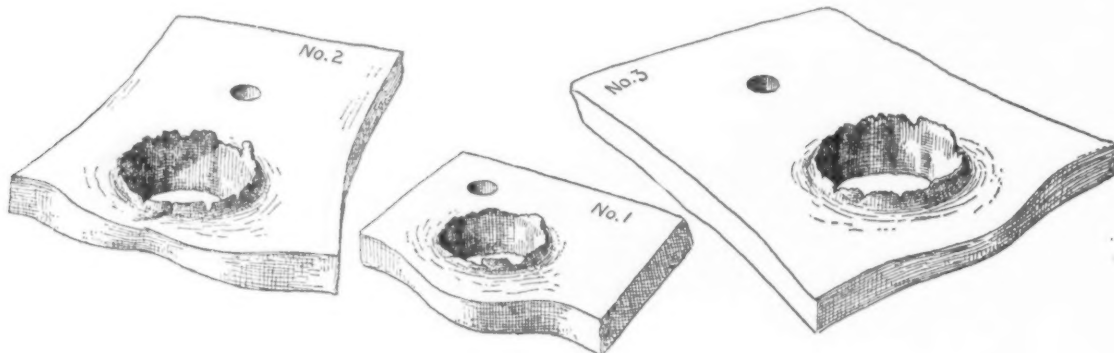
"In your issue of April 27 you give a description of some very excellent drift tests, the devising of which you credit to Messrs. Hunt & Clapp, of the Pittsburgh Testing Laboratory.

"I believe the credit for this test is due to Mr. J. J. R. Croes, chief engineer of

mills mentioned as manufacturing the steel. These tests were made in duplicate, and can be repeated for those desirous of seeing them.

"Test No. 1 is from a 24 x  $\frac{9}{16}$  inch universal steel plate, open-hearth process, made by the Carbon Iron Company, Pittsburgh, Pa. The tension test on this plate gave an ultimate strength of about 65,000 pounds persquare inch and the phosphorus was 0.073 per cent. The original hole was  $\frac{7}{16}$  inch diameter, punched, and the center of the hole was 1 inch from the rolled edge and 4 inches from the sheared end. After drifting it to  $1\frac{1}{2}$  inches diameter, an increase of 245 per cent., the specimen was sheared out and the original-sized hole punched alongside the drifted hole.

"Tests Nos. 2 and 3 were made later upon a 16 x  $\frac{9}{16}$  inch universal steel plate, basic open-hearth process, made by Carnegie, Phipps & Co., Pittsburgh, Pa. The



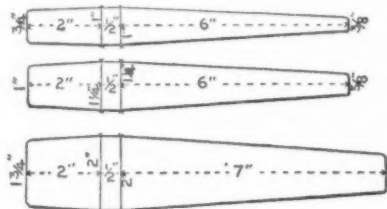
DRIFTING TESTS OF STEEL.

and polished surface upon both sides of the sheet and also in producing a sheet having the requisite degree of uniformity. Attempts have also been made to produce metal bars, rolls and shapes by pouring molten metal between two revolving rollers, the molten metal damming up and collecting in the space above between the rollers. This method is described in a patent which was issued in 1865 to Bessemer. This method was not practicable, since the body of molten metal above the meeting-line of the rolls and in contact with the rolls became chilled and solidified partially before passing through the rolls, which were so heated as to prevent their properly chilling the issuing stream which passed between them. It is evident that the machine we illustrate obviates the difficulties of both these old methods and provides a successful and practical means for producing sheet-metal of uniform thickness and having both sides smooth and even. The wide, flat stream of molten metal comes in contact with the rolls only at the meeting-line, and this momentary contact is amply sufficient to solidify the molten metal and instantly convert the flat liquid stream into sheet-metal. As both sides of the stream are equally acted upon by the rolls, both surfaces have the same finish. How far this method may be applicable in other metals and in large sizes is an open question. Steel manufacturers who have examined the machine are confident that it will not only roll soft metal in sheets, but that it will also roll steel in sheets, plates and shapes. It is proposed to use this same machine in the manufacture of sheet-steel for tin-plates. In this the metal may be rolled into long ribbons of the exact width required to make a can, so as to have as little waste as possible, after which the sheets will be passed by machinery through the necessary baths for tinning.

The machine is the invention of Edwin Norton and John G. Hodgson, of Maywood, Ill., and has been tested most thor-

the Suburban Rapid Transit Company, who, in March, 1888, wrote a specification governing the manufacture of some steel angles that were to be punched without reaming. A clause in this specification reads as follows:

"Any with hole punched as in ordinary practice shall stand drifting to a diameter 25 per cent. greater than the original hole without cracking either in the periphery of the



Drifts Used in Tests.

hole or on the external edges of the piece, whether they be sheared or rolled."

"I had immediate charge of the inspection of these angles, and made numerous tests upon them. The angles were made by Carnegie, Phipps & Co.

The first two or three tests showed that the increase of 25 per cent. could be got without difficulty, and I then began trying for the limit; upon reaching 73 per cent. I was unable to go any further, as the drift would not enter a hole smaller than  $\frac{1}{4}$  inch diameter, and was  $1\frac{3}{4}$  inches diameter at the largest part. This 73 per cent. drift was then adhered to, and the test successfully made upon the whole lot of angles. These angles were about 60,000 pounds ultimate strength per square inch, and contained between 0.05 and 0.06 per cent. phosphorus.

"Upon inquiry at the Carnegie mills, I am told that no drift tests had been made there previous to those mentioned above.

"I forward you some remarkable drift tests which I have recently made at the

ultimate strength of this plate was about 46,000 pounds per square inch and the phosphorus 0.006 per cent. The center of the  $\frac{7}{16}$ -inch punched hole in test No. 2 was  $1\frac{1}{2}$  inches from the rolled edge and about 2 inches from the sheared end. Notice that when crack appeared the metal had begun to reduce at this point, the same as with a tension test. The three drifts that were used in making this test were driven from opposite directions, forming a fin on each side of the drifted hole.

"Test No. 3 is from the same plate as test No. 2, and in this the center of the  $\frac{7}{16}$ -inch punched hole was placed 2 inches from the rolled edge and the drifts driven entirely in one direction. The 2-inch drifted hole gives an enlargement of 357 per cent. on the original diameter.

"I inclose you sketches of three drifts similar to those used in making the above tests, and which I have found to be quite convenient and to give good results. Nos. 1 and 2 will be sufficient for most purposes, and No. 3 can be used in conjunction with them for extra-large drifts.

"The maximum drift with No. 1 on a  $\frac{7}{16}$ -inch hole will be 128 per cent.

"The maximum drift with No. 2 on a  $\frac{7}{16}$ -inch hole will be 122 per cent. and in conjunction with No. 1 on a  $\frac{7}{16}$ -inch hole 186 per cent.

"The maximum drift with No. 3 in conjunction with Nos. 1 and 2 on a  $\frac{7}{16}$ -inch hole will be 357 per cent.

"Ordinary tests may be made upon an anvil, and the drift sledged through, but the best results may be had by using a steam-hammer.

"The test-piece should be supported on the under side by a surface having a hole with a rounded edge, slightly larger than the punched hole to start with, and the size of holes increased as the drift is driven through. Blank nuts make a very good support.

"The drift, in starting, should be entered from the lower side of the punched hole, on account of the taper in the hole



and in order that the fin left in punching may be drawn in by the drift.

"Successful drifts are the more difficult to make as the hole approaches a sheared edge, especially when sheared across the direction of rolling, and in these cases the cracks start in the sheared edges, and not in the hole itself."

In a communication to the same paper Theodore Cooper, the well-known bridge engineer, contributes the following valuable data regarding drifting tests:

"Some years ago the drifting test as applied by the master mechanic of one of our railways to his boiler steel was published. It seemed such a convenient test that I have used it at various times since."

"About two years ago the question was referred to me to decide whether a very large quantity of steel plate, which had been punched, could be safely used without reaming or annealing, either method meaning a large additional expenditure of time and money. The plates were  $\frac{3}{4}$  inch thick and were punched with  $1\frac{1}{4}$ -inch holes."

"Plates were selected at random and tested by the drift test. Under this brutal test the holes were elongated from  $1\frac{1}{4}$  inches to  $2\frac{1}{4}$  inches without crushing the material either inside of the holes or on the exterior sheared edges. These tests satisfied me that reaming or annealing would not better this material for the intended duty. The steel was a very soft, homogeneous material. To determine whether other steels would give as good results, I had tests made on a much harder steel (62,000 to 68,000 tensile strength). One-half of the test-pieces, after punching, were reamed and the other half left as they came from the punch. The tests were also duplicated in iron. The following table gives a summary of the results:

Percentage of Increase in Size of Holes Before the Material Shows Evidence of Cracking.

	%in. steel plates.		%in. iron plates.	
	Holes punched, Per cent.	Holes punched and reamed, Per cent.	Punched, Per cent.	Punched and reamed, Per cent.
Min. result....	54	93	54	46
Max. result....	123	100	54	46
Ave. result....	97	106	54	46
<hr/>				
	5 x $3\frac{1}{2}$ x $\frac{3}{4}$ steel angles.		5 x $3\frac{1}{2}$ x $\frac{3}{4}$ iron angles.	
Min. result...	92	33	36	24
Max. result....	115	176	36	24
Ave. result....	100	73	36	24

"In the above the external edges of the angles and plates were mill-rolled."

"Another series of tests was made with holes punched within two diameters of edges that were sheared:

	Steel plates. Percent.	Steel angles. Percent.	Iron plates. Per ct.	Iron angles. Per ct.
Min. result.	11 $\frac{1}{2}$	10.8	15	14
Max. result.	14	12	17	15
Ave. result.	12	11.4	16	14 $\frac{1}{2}$

"Another series of tests was made by a different inspector on a different make of steel, but of about the same tensile strength, with very similar results."

"In my general specifications, published June, 1888, I introduced the following clause:

"Soft Steel.—113. Soft steel (§ 131) may be used under the same conditions as wrought-iron for all riveted work. Provided that:

"114. Any rivet-hole punched as in ordinary practice (§§ 42 and 43) will stand drifting to a diameter 25 per cent. greater than the original hole without cracking either in the periphery of the hole or on the external edges of the piece, whether they be sheared or rolled."

"At my recommendation Mr. Croes introduced it into the specifications for the girder-work of the Suburban Rapid Transit Company's lines."

"I requested Messrs. Hunt & Clapp and Messrs. Ferris & Co. to extend the above tests to other steels and other sizes of material, making comparisons with similar forms of iron and with holes punched and reamed."

"I also endeavored to get the bridge companies interested to make similar tests, to determine whether on mild or soft steel any gain, as far as reliability is concerned, is obtained by reaming punched holes."

#### Important Pittsburgh Tax Decision.

The test case of the Hartman Steel Company, Limited, against the city of Pittsburgh was decided by Judge Slagle last week. The question was on levying a business tax on large concerns, such as coal, coke and iron firms having branch offices in the city and their works elsewhere. It was a suit in equity to prevent the city and W. R. Ford, Delinquent Tax Collector, collecting the business tax levied on the Hartman Steel Company, of which the main office and works are at Beaver Falls. The ground for the tax was that the contracts were made in Pittsburgh and therefore the business was done there. The court divides the business of the firm in classes, as follows:

First.—Goods manufactured at Beaver Falls, sold to customers living in Pittsburgh and delivered to them on board cars at Beaver Falls, consigned to them at Pittsburgh.

Second.—Goods manufactured at Beaver Falls, sold to customers living in Pittsburgh and delivered to them at the railroad depot in Pittsburgh, contracts being made outside the city.

Third.—Goods sold to customers living outside of the city of Pittsburgh and delivered to them at Beaver Falls.

In the first and third classes the contracts were made in the city of Pittsburgh and in all cases on credit, and three-fourths of the purchase money paid in Pittsburgh and the remainder collected by drafts credited to the accounts of the Pittsburgh office. The only question was as to the power of the city to impose the taxes sought to be collected. The only authority quoted is the act of March 7, 1846, Section 2, authorizing councils to levy and assess upon all articles of trade and commerce sold in Pittsburgh the annual tax not exceeding 5 mills on the dollar. On the third class mentioned the issue by plaintiffs is that in order to subject them to taxation the goods must not only be manufactured within the city, but the sale perfected there, while the defendants claim it sufficient if the sale be made within the city and it is only necessary the contract be made sufficient to pass title between the parties.

The court called attention to the act imposing a tax, not upon sales, but upon goods, wares, &c. It was deemed clear, therefore, that property which has never been within the city limits is not taxable under the act above quoted merely because the contract of sale was made there. In the first class the court deemed it clear that the sales must be held to have been made in Beaver County and that title had passed out of plaintiffs before they were brought into the city of Pittsburgh, and they were not taxable as plaintiffs' property sold there.

A decree will be issued restraining the collection of taxes upon the first and third classes. In the second class the sales, in the same course of reasoning, came within the terms of the act "goods sold."

Some 40 of the largest firms in Pittsburgh are interested in the above decision. The Board of Assessors state that what they wanted was to have a vexed question settled which has been under discussion for several years but never decided. It is probable an appeal will be taken by the city.

#### The New Labor Organization.

In the ranks of organized labor the American Federation of Trades is apparently the force which is to be the most active in the immediate future, and it has plans which are of much importance to the industrial world. Next year, such is the prediction now made, will be an active period for the labor agitators, for the Federation of Trades has a membership of over 500,000. Its chief effort will be to secure a reduction of the hours of labor for a day's work to eight, and it is the plan now to concentrate their strength to that end in the spring. It is not the plan to secure this length of a day's work for all of the trades at once, but to limit the movement to certain advanced trades, especially in the cities. The building trades are mentioned as those especially in which the effort will be first put forth. The men in these trades are now working only nine hours a day, and though they are now paid by the hour, yet they receive about as much for that time as they did when they worked the full day of ten hours. It is a part of the principles of the organization that every trade shall continue to exercise full control over the matters which are distinctly within its province—and therein lies an important difference between it and the Knights of Labor—and that the central organization has full control only in those cases where the interests of all are concerned, as distinct from the interests of any particular trade. For instance, it is in the province of the federation to work for the shortening of a day's work to eight hours, for that falls under the exclusive jurisdiction of no particular trade, but does concern them all. Regarding the new labor organization which is being formed by ex-Knight Barry, it is said that he and another organizer are at work and are gaining rapidly.

Col. Thomas North, the "Nitrate King" of Chili, was in this city last week. He went to Chili from England when a boy, as a mechanic, and 22 years ago was riveting boilers in the shops at Huasco. Seeing his opportunity at the close of the war with Peru he obtained a concession from the Government for a nitrate deposit. To-day, eight years since coming into possession, he is supposed to be worth \$10,000,000, and is negotiating for an additional concession at Tarapaca. A railroad 125 miles long runs from Iquique and Pisagua zigzag up the mountains to the nitrate fields. Immense works are necessary to turn the deposits into the nitrate of soda of commerce, which has practically succeeded to guano and superphosphates as a fertilizer in Germany and France, especially for the sugar-beet fields. Last May at Iquique there were 47 vessels loading with nitrate of soda, and there were 45 loading at Pisagua. In consequence of the new concessions to Colonel North these industries will be enormously increased. Aside from other interests Colonel North has large coal and iron interests on the Bio Bio River, where a railroad is building for their more extensive development.

The Miners' Examination and Registration law in the anthracite region of Pennsylvania promises to work a revolution in the question of the supply and demand of labor. By compelling the examination of every applicant for work in the region as to his fitness and experience it excludes the unskilled and irresponsible, who have been a contributing element in so many mine disasters. It will go still further and prevent the wholesale importation of the ignorant, incompetent and undesirable foreigners who have overrun portions of the anthracite district.

### Forming Elliptic Springs.

The machine here illustrated is intended for the forming of elliptic springs and is in use both in this country and Europe. It is the invention of J. S. Pessinger, of Brooklyn, N. Y. In this method the plate

parts of the anvil-block yield, allowing the other on each side to come in play in succession. In this manner the plates are hammered or pressed from the center to the right and left and accurately molded to the form of the anvil-block. The weight of each hammer remains upon the

on fifth class, and from 19 to 26 on sixth class. On window-glass in carloads a rate of 22½ cents has been made, while in less than carloads 25 cents will rule. On table glass-ware and druggists' ware 32½ cents in carload lots will be charged to St. Paul, Stillwater and Minneapolis.

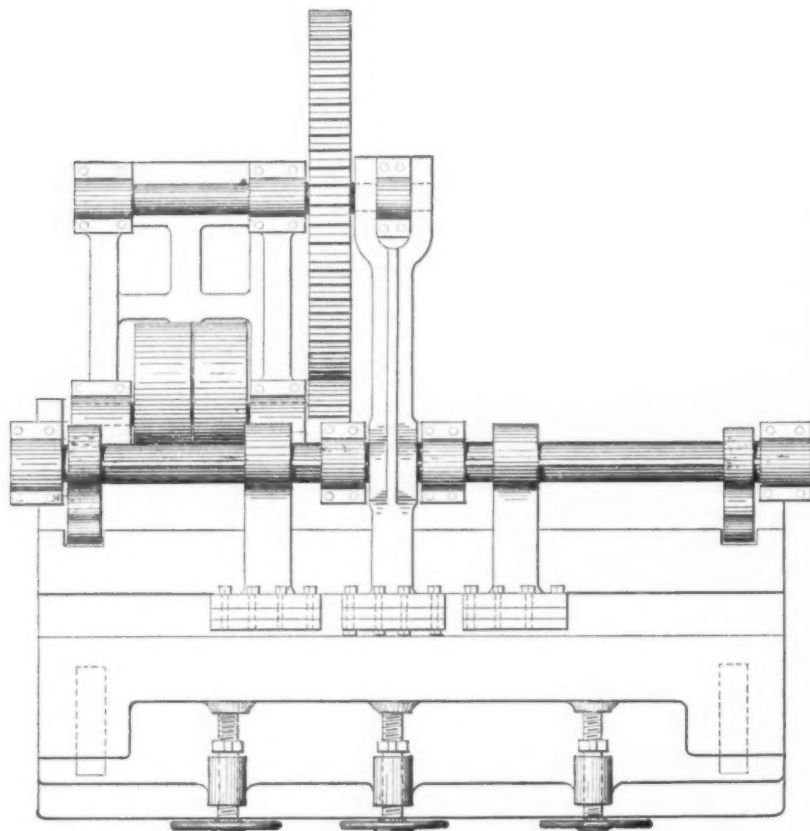


Fig. 1.—Front View of Machine for Forming Spring Plates.

destined to form a part of the spring is first placed in a heating-furnace and then passed to the machine shown in Figs. 1 and 2, which gives it a lateral grip to bring the plate true on its edges; while the plate is thus held it is punched, slotted or ribbed by means of dies carried by arms operated by the crank connection shown in Fig. 2. Before the plates have lost their first heat they are taken to what we may appropriately term the forming-machine, Figs. 3 and 4, which gives them the desired curve. This machine, which is perhaps the more important of the two, does away with the difficulty arising from the proper fitting of the various laminae of the spring together. The machine being once set, the several plates forming the spring are, of necessity, compelled to fit perfectly, since each is formed according to the same model. The plates are bent to the desired curvature by the single stroke of a hydraulic ram. The anvil or bending-block of this machine, Figs. 3 and 4, is made up of a series of adjustable pieces which can be set to varying heights, so that their upper surfaces form the curve of any shape desired, as shown in the dotted line in Fig. 3. This bending-block is mounted in a vertical slide, and is adapted to be moved instantly by the hydraulic ram to which it is attached. Each of the pieces forming the block is held in position by nuts, as indicated. Over the anvil and carried by the main frame is arranged a series of hammers formed of narrow weights closely packed together and arranged to slide one against another. As the anvil-block with the hot plate upon it rises, it comes first in contact with the weights or hammers in the center, so that as the stroke continues the center weights opposite the highest

plate and holds it down. The position of the plate is determined by a pin in the center and the motion of the ram is controlled by the foot, leaving the hands of the workman free to handle the plates.

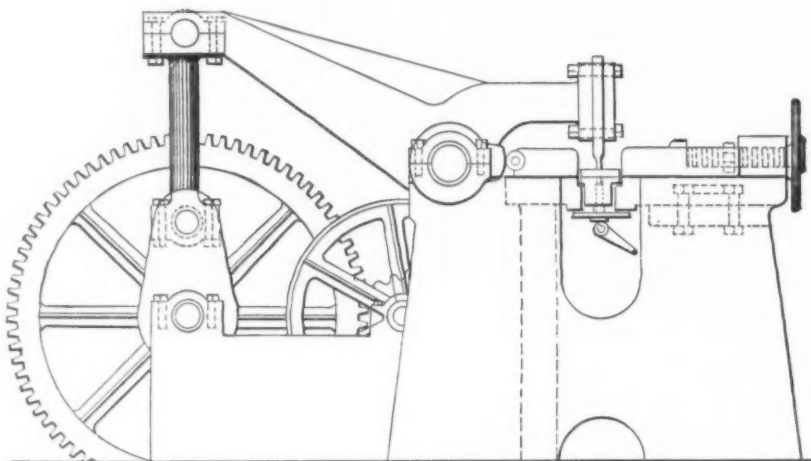


Fig. 2.—End View.

These two machines perform all the operations necessary to give the plate the desired form at one heat.

The rates on the six classes of freight from Pittsburgh by all-rail routes to the Northwest were advanced on the 5th inst. from 60½ to 70 cents on first class, 55½ to 62 on second class, 39½ to 55 on third class, 27 to 38 on fourth class, from 22½ to 29

### The Hawkesbury (Australia) Bridge.

This bridge, which was opened for traffic May 1, says the *London Engineer*, is the largest of its kind in the southern hemisphere, and, as regards its foundations, one of the most remarkable in the world. The bridge crosses the Hawkesbury River at a point 36 miles north of Sydney and 10 miles from the sea, being the last link in the continuous all-rail connection between the principal cities of the four colonies—South Australia, Victoria, New South Wales and Queensland. The distance by rail between Brisbane and Adelaide will be slightly over 1800 miles, and the longest railway journey now possible in Australia is 2600 miles.

The successful tenderers for the work, which included the design, were the Union Bridge Company, of New York, and they commenced operations about October, 1886. Their tender amounted to £327,000, and the total cost of the bridge complete, including abutments, will not exceed £350,000. Owing to the peculiar conditions attached to the invitation for tenders, few responsible contractors cared to tender, especially as any examination of the site was impossible, owing to the brief period allowed for framing estimates. The Union Bridge Company proposed to dredge the tubes out by Messrs. Anderson and Barr's method, and this was considered the most suitable of the methods proposed for such a deep foundation, and consequently their tender was accepted. The steel and iron work was nearly wholly of British manufacture.

The design showed seven spans of 416 feet from center to center of the piers, which were to be built upon foundation caissons of a novel description, the only parallel to which is to be found in the almost contemporaneous works of the Poughkeepsie Bridge over the Hudson River, in the United States, and the

Jubilee Bridge over the Hooghly, in Bengal. The caisson for each pier is rectangular in form with rounded ends, 48 by 20 feet, splaying out 2 feet wider all round at the bottom. The main outer skin is ¾ inch steel; inside this are three wrought-iron dredging tubes, arranged on the longitudinal center line of the caisson, and connected with it by angle and 1-inch steel strutting. The dredging tubes splay out



in a trumpet mouth at the bottom, meeting the outer skin and each other in strong steel cutting edges. The top of the caisson as built is open, and exhibits the

with concrete as the mud in the tubes was removed by dredging, thus causing the whole to descend through the deep mud of the bed of the river until the

position, the length of span No. 6 was increased 4 feet 3 inches, thus making the actual length of the bridge between abutments 2900 feet 3 inches.

The method adopted by the contractors for putting these large spans in place was as follows: A pontoon 335 feet in length by 61 feet wide and 10 feet deep was constructed, with a staging upon it sufficiently high to enable the girders to command the piers when the pontoon was floated out at high tide. The girders being 410 feet long overhung the pontoon, the length of which had to be regulated by the minimum water space at the abutment spans. When the pontoon, which was provided with 44 water-tight compartments, was complete with its staging it was towed over a gridiron of piles and sills in shallow, sheltered water and sunk, the exterior and interior valves of the compartments being all left open so that the water ran freely in and out at all tides. The complete span was then put together on the top of the staging. The roadway girders and all but the sleepers and rails were placed in position, except on the overhanging portion, which was lightened and temporarily strengthened. This done, at low water of spring tide, weather being favorable, the valves were closed, and as the tide rose the pontoon floated and was conveyed by 6-inch hawser to the bridge, and running over a winding-engine on the pontoon, this being aided by a steam-tug and the flowing tide. When the pontoon had reached the proper position it was moored between the piers and allowed to fall with the tide, leaving the girders in place on the piers. The pontoon was then brought back and placed again on the gridiron at the next high tide, and the same cycle of operations was repeated.

This operation was carried out with varying but ultimately successful issues in all cases, spans Nos. 1, 6 and 7 having been from adverse weather the most troublesome. The dates of launching the spans were as follows: No. 1, July 12, 1888; No. 2, September 8, 1888; No. 3, August 16, 1888; No. 4, May 25, 1888; No. 5, January 29, 1889; No. 6, March 1, 1889; No. 7, October 6, 1888. The roadway was completed on April 23, 1889. The bridge was formally opened for traffic May 1, 1889. The bridge was tested on April 24, two trains, making up a total weight of 910 tons, being placed one on each road on each span in succession. The live load was thus about 1.11 tons per foot run for each line of rails. The total deflection of each span in the center was  $2\frac{1}{2}$  inches in every case, as measured by a theodolite on the abutments and by a water-gauge. The permanent set varied from  $\frac{1}{8}$  inch to  $\frac{1}{4}$  inch for the different spans, the variation being probably due to errors of observation. Two engines on each road coupled together and running at 35 miles per hour gave a lateral oscillation of  $\frac{1}{4}$  inch. The deflection of each cross-girder under these circumstances was 15 inches and 11 inches at a slow speed.

A polytechnic school is about to be established in Pittsburgh under the auspices of the Western University. The building now in course of erection on Observatory Hill will be called Science Hall, and will be of brick and stone, 84 x 61 feet. In the basement will be a forge-room, testing-room, wood-working room, foundry, modeling-room, pattern-room, metal-working room and a supply storage-room. On the first floor will be the various laboratories, apparatus-room, lecture-room and an office. On the second floor will be rooms for collections and other purposes.

Corrugated iron is now used generally throughout Central America for roofing instead of pottery, which requires frequent repairs.

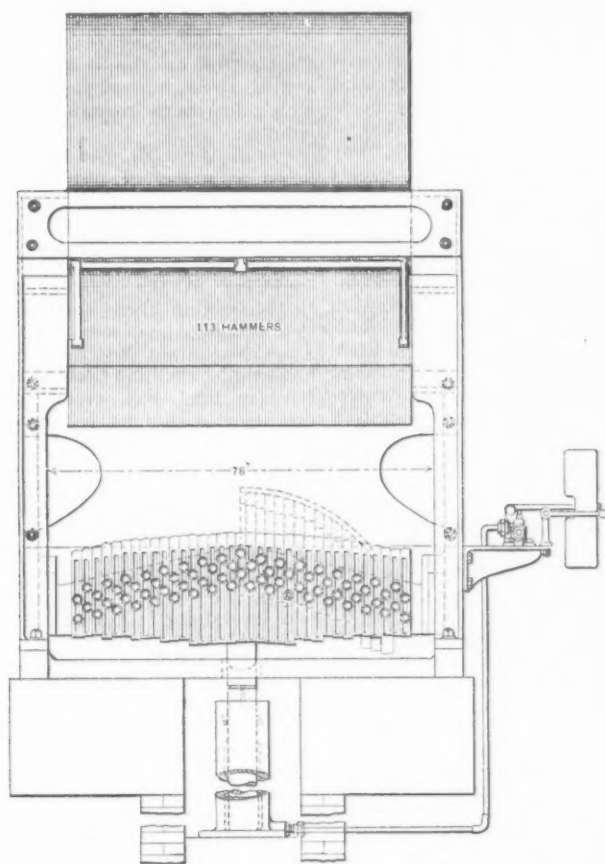


Fig. 3.—Front View Spring-Plate Forming Machine.

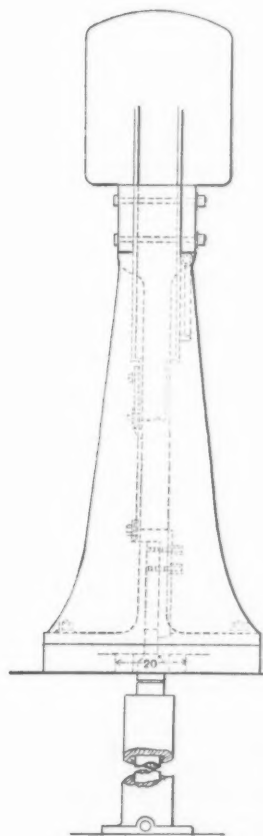


Fig. 4.—End View.

caisson rested on the firm bottom beneath. The wells or tubes were then also filled with concrete, making a solid mass entirely below water, on which the masonry piers were erected. The first section or ring of the caisson was in each case built up on shore, and towed out to position and sunk to the bottom of the water when dredging was begun, and successive rings added as the descent proceeded.

The dates of these operations, as regards the different caissons and the depth below high-water level to which they were sunk, are shown in the following table:

No.	Launched.	Bottomed.	Depth in feet.
1.	August 9, 1887.	November 3, 1887.	101
2.	October 4, 1887.	January 30, 1888.	155
3.	November 29, 1887.	February 16, 1888.	146
4.	March 8, 1887.	June 29, 1887.	147
5.	December 9, 1886.	October 9, 1888.	144
6.	May 9, 1887.	May 11, 1888.	162

The last being the deepest bridge foundation in the world.

The masonry of the piers was commenced in each case as soon as the foundation was ready for it. The south abutment was started in March, 1887, and the north abutment in May, 1888. The abutments were ready for the superstructure in April, 1888, and September, 1888, respectively. The superstructure is of a not unusual American type, each span being composed of two girders and carrying a double line of railway. The upper boom or compression member and the vertical members connecting it with the lower chord or tension member are built up of steel plates and angles. The lower chord and the diagonals are formed of solid steel eye-bars in groups. The whole forms what is known as a Whipple truss and the members are connected by steel pins. The length of the bridge between the abutments was, according to the original design, 2896 feet; but in consequence of the caisson of pier No. 6 getting out of

holes for dredging as described, which are 8 feet in diameter and 14 feet apart from center to center. The spaces between them and the outer skin were filled

## American Engineers Abroad.

**Last Days in England—Arrival in Paris—The Exposition—The Eiffel Tower—Close of Official Programme—Excursions.**

(Editorial Correspondence.)

[In last week's issue some space was given to the programme laid down by the French engineers for the entertainment of their American guests. The publication of this programme was anticipatory of the arrival of the American engineers in Paris. The subjoined article treats of the last days of their stay in London and their reception by the French engineers.]

On Monday evening, June 17, a largely-attended meeting of the engineers was held in the main hall of the Institution of Civil Engineers. A number of resolutions were passed in recognition of the hospitality shown to the party by corporations and individuals, the resolutions to be suitably engrossed. In the case of the address to the Queen and the resolutions of thanks to the Institution of Civil Engineers, they were ordered to be illuminated. Considerable information interesting to the excursionists only, so far as their future movements were concerned, was submitted.

Tuesday the party divided into two groups, the first leaving the Waterloo terminus of the London and Southwestern Railway by special train for Hampton Court Station, for the sake of inspecting the works of the Chelsea, East London, Grand Junction, Lambeth, Southwark and Vauxhall and West Middlesex Water companies, at Hampton and Sunbury. In the meantime a second group took a special train for Wimbledon to inspect the sewage-disposal works of the local board, to visit the engine-works of Willans & Robinson, at Thames Ditton, where the party lunched. Both groups joined at Hampton Court Palace, through which they went, then going to Bushey Park.

An attractive programme marked the last day of the stay in the British capital, although the number of those who collapsed under the hard week of sight-seeing had been large. The army of amateur photographers, snapping their detective cameras at everything within their reach, had dwindled down to a corporal's guard, highly critical as to subjects and sights. To those not afflicted by photographic ambition the growing sense of comfort compensated somewhat for the fatigue of travel. The "Kodak fiends" in the early days of their enthusiasm were no respecters of persons or of places, and by their lack of tact gave offense. To wander about royal apartments, thrown open as a favor granted only once in ten years, storing up a series of pictures, was not good taste, to put it mildly. It is the thoughtlessness of a few of a large party which is apt to embarrass hospitable hosts. The time is possibly not far distant when the camera may be as strictly forbidden in many places as the cane or the umbrella. All will have to suffer for the indiscretions of a few.

By invitation of Professor Tyndall, a small number of ladies and gentlemen went to Hind Head House, Haslemere, the home of the famous scientist, where they were entertained at luncheon, meeting a number of distinguished Englishmen. In the evening Professor Bauermann, widely known in America as the author of works on metallurgy, who has for a long time been connected with the London School of Mines, gave a dinner at the Geological Club to a number of engineers and geologists, conducting them later to a meeting of the Geological Society. Another party were conducted over the Middle Temple

by Mr. Pope, Q.C., treasurer of the Middle Temple, their host entertaining them at luncheon. There was hardly a member of the party upon whom during his stay in London hospitality was not showered in the form of quiet dinners at some of the great London clubs, and many friendships were undoubtedly formed which will outlast the interchange of courtesies created by the occasion. Three different trips were offered to the engineers in the morning, the first to visit the freight depots of the London and Northwestern Railway Company, at Camden and at Broad street; the second to inspect the freight depots of the Midland Railway Company, at St. Pancras and at Whitecross street, and the third to see the iron tunneling of the City of London and Southwark Subway Company, at Harleyford street, Kensington Oval. Another group accepted the invitation of the directors of the London Electric Supply Corporation, at Stowage Wharf, Deptford, where they were entertained at luncheon. To the ladies particularly the afternoon was delightfully spent in visiting the flower show of the Royal Botanical Society in the Regent's Park.

Tired, but happy, the engineers gathered early on Thursday morning, June 20, at the Victoria Station of the London, Chatham and Dover Railway Company, where they bid a final adieu to many of their English hosts, who cheered them as they rolled out of the station on their way to Dover. At Dover hand-shaking and cheers were renewed, a small number of the officers of the Institution of Civil Engineers having accompanied them. Followed by the strains of patriotic airs played by a band stationed on the dock, the Empress, specially offered by the railroad company, headed across the Channel. To the majority an excellent collation was a welcome means of passing the time during the trip. A few succumbed to the famous sea of the narrow straits, among them persons who had crossed the ocean without inconvenience.

### ARRIVAL IN PARIS.

A shout of welcome arose when the American engineers first put foot on the soil of "la belle France" at the dock at Calais, a large party of members of the Société des Ingénieurs Civils having come on from Paris to receive their guests. Among them were A. Brüll and A. Gottschalk, past presidents; V. Contamin and P. Jouselin, vice-presidents; D. Bandérali, Ch. A. A. de Fréminville, L. Caen, A. Brichant and Ernest Pontzen, the latter also a member of the American Society of Civil Engineers. After an exchange of greetings and the distribution of characteristically neat brooches to the ladies and badges to the gentlemen the party embarked on the special train tendered by the Compagnie du Chemin de fer du Nord.

Unfortunately the first plan to inspect the splendid new harbor works of Calais, partly still under construction, could not be carried out, since it would have delayed the arrival in Paris to too late an hour. Wild stories of the inadequate accommodations in the French capital, fostered to some extent by those who make it a business to procure accommodations for strangers, had created considerable uneasiness among the engineers. They evidently did not relish the idea of hunting for quarters in a strange city when the chase was to be coupled, too, with the excitement growing out of lack of familiarity with the native tongue. The first struggle with porters and cabmen when the party did arrive, tired and anxious, was full of incidents worthy of the pen of a humorist. The services of those who had been unwary enough to claim a knowledge of French in moments of vain boasting were in great demand. One may have studied Voltaire, Molière, Guizot and Ernest Rénaud,

and may have read modern and naughtier books, and yet find the work of acting as interpreter between an excited Frenchman and a no less agitated American a great strain upon one's linguistic resources. On the way to Paris the special train stopped for a short time at Arques, near St. Omer, to inspect the hydraulic lift of Fontinettes, on the canal between Aire and St. Omer, a great piece of engineering which has been repeatedly described at length.

Friday, June 21, was considerably put down as a day of rest by the French engineers, but a meeting of the committee occupied the morning, while a prospecting visit to the exposition and a brilliant reception to the visiting engineers at the headquarters of the British section filled the afternoon. In the evening numerous small parties of Americans might be encountered on the boulevards, catching their first glimpse of Parisian life. Few were bold enough at first to enter into its spirit by watching the rush of travel, seated before one of the innumerable *cafés*. At a later period of their visit, however, your correspondent noticed groups, among which he fancied that he recognized some more familiar with shopping on Broadway or Chestnut street than with the partaking of ices at Paris *cafés*. They were evidently bent upon doing in Rome as the Romans do. It is no breach of confidence to state that they did not feel very uncomfortable. All have succumbed to Paris and its charms as a city, but the opinion as to its people is not so favorable. The contrast between London at the height of its season and Paris at the lowest part of it tells strongly and unjustly against the latter. A comparison may be unfair, but to an American the Anglo-Saxon type possesses attractions and commands sympathy which the vivacity and gaiety of the Latin race cannot overcome. In England one soon feels at home. In France one cannot shake off the uncomfortable sensation of being among strangers, in spite of the eager hospitality of the French engineers.

The official reception of the visiting engineers took place on Saturday, June 22, in the room occupied in the gallery of Machinery Hall at the exposition by the Société des Ingénieurs Civils. Monsieur G. Eiffel, president of the society, whose latest monument of engineering skill is the famous tower bearing his name, addressed the meeting, after which a special train of the Décauville narrow-gauge road was taken to the tower. Then followed the ascent of

### THE EIFFEL TOWER,

whose outlines have now become familiar to all through the many illustrations of it which have been printed. Like many great works, the first impression which it creates is likely to cause some disappointment, probably because at first the eye has no adequate means of reference. Viewing it from day to day, often at a distance, one becomes more and more impressed with its magnitude and its grace. Its construction was violently opposed by the greatest artists and architects in France, on the ground that from an artistic stand-point its conception was monstrous, and that it would be a lasting reflection upon French taste. The voice of those who signed the protest is now silent. It is perhaps the greatest praise which can be awarded to the tower that it does not oppress the beholder with its magnitude. As one of the visiting engineers tersely put it: "The tower grows on one." It seems to become larger and more impressive every time it is studied. But after all the best idea of its size is obtained by ascending to the top. The panorama simply beggars description. Spread at one's feet is the splendid city,



with its wooded hills, its monuments and its parks, the Seine winding through the landscape, crowded with steamboats and spanned by numerous stone bridges. Below lie the magnificent buildings of the exposition, and across the Seine the Trocadero, the only permanent structure of the exhibition of 1878. What is left uncovered by buildings on the Champ de Mars is alive with people, who appear from above as merely tiny moving dots.

On their arrival at the tower the engineers found that practically the public had been excluded from it for the time being. Successively they passed to the first, the second and finally to the third platforms, and a few even ascended into the lantern, the number being too great to allow of others than those possessing the greatest patience to climb the narrow staircase and crowd through the vertical tube which leads to the highest small platform. The ascent, on the whole, is very slow, the French elevators particularly running at a speed which is slightly irritating to the average American. Tickets are sold for the first, second and third platforms respectively and are taken up singly, and the most rigorous precautions against overcrowding the cages are observed. The third vertical lift involves passing from one car to the other midway. There is usually a crowd, so that the ascent occupies anywhere from one to two hours, the descent taking less time. The engineers were thoroughly delighted with their experience, and when they regained the first platform found a sumptuous luncheon spread in the Restaurant Brébant, the French and American colleagues fraternizing so far as the difficulties of making one another understood would admit of. M. Gustave Eiffel spoke well in French, welcoming the visitors, Henry R. Towne responding in French and in German. Other speeches followed, among them one by M. Bandéhari.

#### AT THE EXHIBITION.

The party then divided into seven groups, one being interested in mining, the others in metallurgy, machinery, boiler manufacture and sugar machinery, railroads, electricity and in public works. The parties thus made up were conducted through the exhibition, each by a number of French engineers familiar with the different branches and with the English tongue. Your correspondent made a prospecting tour to obtain a general impression, trusting to his own later more thorough study to discover the points most likely to interest the readers of *The Iron Age*. He must confess that he is appalled at the magnitude of the work so lightly undertaken. The first impressions of many with whom he has conversed are conflicting. All are overwhelmed with the magnitude of the show, the colossal proportions of the buildings and their beauty. It was, however, when your correspondent attempted a critical and detailed examination of some sections, accompanied at different times by experts in certain lines, that the variety and excellence of the products shown became strikingly evident. This applies particularly to the French section. The people have made herculean efforts and have succeeded in astonishing themselves.

As is only natural, those carefully examining certain lines of work in which they are specially interested find little which is sensationally new. As one who walked about in Machinery Hall looking at the engines put it: "There is nothing new. They have put the Corliss engine down flat, have placed it on its feet, stood it on its head, laid it on its side, but it remains the good old Corliss engine all the same." Still, every one seems to come home in the evening having seen something to admire in his own department, often, too, having discovered something

which he thought he was quietly doing all alone by himself at home, and quite frequently acknowledging that he had seen some "cute idea," or has had his eyes opened by splendid work. All agree that it is very fatiguing work, the heat being great, particularly in the glass-covered Machinery Hall. Besides, few have escaped the temptation of succumbing to the many interesting and pleasant excursions arranged by the French engineers, some of them being to points of professional interest, while others were arranged to afford the American visitors opportunities for sight-seeing under specially favorable circumstances.

A drive to St. Cloud and to Versailles seemed to offer temptations to the greatest number of the party on Sunday. In the immense crowds which gathered in the Trianon and in the Palace of Versailles during the play of the fountains in the afternoon and the beautiful illumination of the great fountains in the evening your correspondent met familiar faces at every turn.

#### EXCURSIONS.

Work began again on Monday morning, June 24, four different excursions being offered to the distracted engineers. By special authority of M. Alphand, Chief Engineer of Works of Paris, a trip, partly by boat, was made through the famous sewers of the city, the distance between the Place de la Madeleine du Châtelet being made in opposite directions by two parties. Some of the engineers, under the guidance of a director, went through the great Gobelin tapestry factory, where, by hand-work exclusively, the famous pictures are woven, some of them taking decades to finish. A small number availed themselves of the privilege accorded to visit the Observatory, being conducted by one of the staff of astronomers. They and those who had visited the Gobelin factory united later in the morning to inspect Pasteur's famous establishment, in the Rue Dutot, where they made a study of mad dogs and Pasteur's methods of inoculation. An unexpectedly small number gathered at the Ecole des Mines, where, under the guidance of M. Haton de la Goupillière, the chief of the establishment, they inspected the mineralogical, geological and paleontological collection of the ancient school of mines.

The official excursion of the afternoon was to the works and shops of the Compagnie Générale des Voitures à Paris, the largest of the cab companies of the city, and to the shops of the Compagnie des Omnibus, who own the car and omnibus lines of the city, but was somewhat interfered with by a visit not on the programme. Through their president, Baron Deslandes, and their engineer, Victor Popp, the Compagnie Parisienne de l'Air Comprimé invited a number of engineers to inspect their plant in the Rue St. Fargean. The company distribute power in very much the same way as the New York Steam Heating Company furnish steam. Compressed air is delivered by a pipe system to consumers throughout the city, which participates in the profits of the enterprise to the extent of 15 per cent. after interest and a certain dividend on stock have been paid. The company have found their capacity so much taxed that they are now engaged in enlarging their works. They furnish compressed air to drive electric plant, sewing-machines, printing-presses, and have a splendid field in the supplying of power to the enormous number of small factories of thousands of knick-knacks which are specially characteristic of Paris. Certain quarters of the town are veritable hives of industry, dozens of modest concerns being located in some buildings inside courts and alleys. Besides this, the compressed air is used to run a system of pneumatic clocks all over the town, and is employed to aid the combustion of

domestic oil stoves, cook stoves and heaters. At the Rue St. Fargean a small oven has been built to show the use of compressed air in conjunction with oil for high temperatures. During the visit of the engineers a sheep was cremated in it, in full sight of the observers.

The plant consists of 13 return-flue cylinder boilers, the coal burned being from the Pas de Calais and Nord districts, the pressure being 8 kg. per sq. mm. at the boilers. The main compressor plant comprises six double compressors, built by Davy, Paxman & Co., Colchester, England. Two curiously-constructed vertical compressors were used, designed by Fourlinnie and built by Adolphe Casse, Fives-Lille, Nord, and two engines by Joseph Farcot, St. Owen, Seine. The compressed air is cooled by special apparatus, the refrigerating chambers possessing the added interest of containing a few corpses. The water used for spraying in the compressors and in the jackets is pumped over a series of flat tanks, from which it drops, cooling as it falls. At the time of the visit of the engineers the enlargement of the works was going on; the foundation was being laid for five more compressors, which are to embody the latest ideas, by M. François, well known for 25 years in connection with rock-drilling machinery in Europe. The new compressors are being built by the Cockerill Company, of Seraing, Belgium. M. François has designed his compressor in accordance with his own ideas. He holds that the amount of water which must be used in the air-cylinder may be divided into two parts, whose functions are different. One consideration in connection with a compressor is that the outlet-ports must be large. When that principle is accepted, the amount of dead space at the end of the stroke is large, unless precautions are taken to fill it with water. He therefore allows a certain quantity to enter the cylinder to fill that space at the end of the stroke. Another quantity of water is wanted to cool the compressed air by injection. M. François' idea is that in order to properly atomize this water, to spray it thoroughly, it must be introduced under pressure. His apparatus to accomplish this purpose is ingenious. The spray is carried over to the air-receiver, when the water collects. The air-receiver is connected with a differential piston whose action opens and closes the spray-valves so that the water is admitted into the cylinder in a jet, under high pressure, the spraying being done by allowing the jet to impinge upon a lug opposite the inlet-orifice in the cylinder. This arrangement is used for single compressors. When there are a number a hydraulic pump is used. We may mention in this connection that some of the consumers of compressed air for power purposes heat the compressed air by passing it through flues in a small coke-fired oven before allowing it to enter the cylinders of the engine. If we remember rightly, one at least of the manufacturers of air-compressors in the United States has experimented with this idea.

In the evening Baron Deslandes and M. Victor Popp gave a banquet at the Châtelet des Isles, in the Bois de Boulogne, to a large number of the party, the dinner being served under the trees, with the Estudiantina Española discoursing the characteristic tunes of the Spanish students on guitars. A number of impromptu speeches in French and English followed, at least one of the Americans venturing on the slippery ground of a foreign tongue, while some of the French engineers tried humorously English as she is spoke. Rowing over the Lac Inférieur the party returned gayly to Paris in a number of four-horse drags, some of them ending in going to "Montagnes Russes," the Russian roller toboggan slides.

Tuesday morning, June 25, those particularly interested in the exhibition had

with a major part of them. The firm's policy is not one of hostility to organized labor, but a question of conducting business on a basis of profit. If they cannot get the men the works will stand idle until they can.

A charter for the Republic Iron Works, Limited, of Pittsburgh, was placed on file last week. The company has been re-organized and the capital stock increased to \$600,000, divided into 6000 shares at \$100 per share. The directors are E. C. Converse, John H. Flagler, Horace Crosby, Joseph R. Jackson and W. A. Dun-see.

From a recent issue of the Youngstown, Ohio, *Telegram* we take the following: "One of the recent new improvements in the rolling-mill business is in use at the plant of the Mahoning Valley Iron Company in this city. It is a set of chill-rolls turned in such a manner that a piece of steel rail may be rolled down to any thickness necessary to the manufacture of cut nails. It has always been a puzzle among iron-makers how this could be accomplished without a lap-weld. The nails made from this steel are perfect and are being used extensively. The patentee and designer of the rolls is Sidney McCloud, of Chicago; Charles Brown, formerly of this city, but now of Hamilton, Ont., also assisted materially in designing the rolls."

The Swindell & Smythe Company, Lewis Block, Pittsburgh, Pa., have closed contracts with the following firms for gas-furnace plants: At the Paige Tube Works, formerly the Warren Tube Company, Warren, Ohio, they are completely remodeling the tube-welding and tube-bending furnaces, also the gas-producers, to their latest and special designs. It has been necessary for them to take the old furnaces down complete to the foundations and to build new ones in their place. For the Etna Iron and Steel Company, Bridgeport, Ohio, they will build some of their most improved regenerative gas-heating furnaces, also an artificial gas-producing plant. They have also contracted with the Standard Mfg. Company, Allegheny City, to build for them three melting-furnaces and a large enameling-furnace to run with natural gas.

Carnegie, Phipps & Co., Limited, of Pittsburgh, have commenced the manufacture of wrought-iron turn buckles. At present they are prepared to furnish from 1-inch to 1½-inch inclusive. Other sizes will be added as rapidly as possible.

The Pittsburgh Bridge Company, of Pittsburgh, have received the contract for rebuilding the bridges at Blairsville and Nineveh destroyed by the Johnstown flood. The contract price is \$325,000 for both bridges.

A press dispatch from Conshohocken, Pa., under date of the 3d inst., says: "The blast-furnace of McHose & Sons, at Norristown, chilled last night, for the third time within a period of six months. The first accident occurred in January. The salamander which formed was removed by exploding dynamite in it. The stack was relined and operations were resumed. About four weeks ago operations had to be suspended again, and dynamite was once more resorted to for loosening the chilled metal. Again the stack was relined, and yesterday the furnace was put in blast, with every belief that the firm would enjoy a successful run. Before night the gas poured through the crevices of a portion of the old brick-work, and the casing outside became red-hot, and it was impossible to drive sufficient heat to the top. This morning it was announced that the furnace had chilled. These misfortunes are very discouraging to McHose & Sons, but it is said they will go to work at once

to prepare for a resumption as soon as possible. It is believed the dynamite unsettled the brick-work and caused the leak through the masonry."

Gordon, Strobel & Laureau, Limited, of Philadelphia, have closed a contract for a 12 x 50 charcoal furnace to be erected at Jefferson, Texas, by Chicago parties. The work will be completed in about six months.

C. Y. Wheeler & Co., of Pittsburgh, who have operated the Sterling Steel Works, at Demmler, Pa., for five years, under lease from Charles Jones, the owner of the plant, have purchased the same for \$28,000 and will enlarge and remodel it. The company recently increased their capital stock to \$150,000.

The blast-furnace at Tonawanda, near Buffalo, N. Y., is to be put in blast about August 1 by the Tonawanda Iron and Steel Company. This furnace was built by the Niagara River Iron Company in 1873, but was in blast only a short time. It is 16 x 61 feet in size, supplied with Ford stoves, and the equipment has been kept in good order. Under the new management Lake Superior and Lake Champlain ores will be used, with coke as fuel. The new company expect it to turn out 100 tons of strong foundry pig-iron daily. The president of the company is William A. Rogers; vice-president, Archer Brown; secretary and treasurer, J. S. Willett; general manager, F. B. Baird. Rogers, Brown & Co., of Cincinnati, will be sales agents.

The Redemann-Tilford Steel Company, of Louisville, Ky., have issued a pamphlet of 21 pages setting forth the merits of the process owned by the company and quoting a large number of testimonials to the excellence of the steel which have been furnished by prominent steel manufacturing and consuming establishments in various parts of the country. The Redemann-Tilford process consists in the conversion of Bessemer or other low-grade steel into high-grade steel, avoiding the expensiveness of the processes in general use for the manufacture of steels of the best quality. The results which are given in this pamphlet are remarkable, the testimonials coming from persons of very high standing in the iron and steel trades. The company are offering for sale a limited amount of their stock for the purpose of erecting a plant to put their process in operation.

The Beaver Valley Mfg. Company, Limited, West Bridgewater, Pa., expect to soon have their new open-hearth steel-foundry in operation. They are putting in a 10-ton Ridgway steam hydraulic balanced crane and when this is erected will run their works to their full capacity.

A decision was rendered in the Common Pleas Court at Youngstown, July 6, in the case brought by the creditors of Brown, Bonnell & Co., a rolling-mill corporation. The court held that the corporation should be dissolved and a receiver appointed. Brown, Bonnell & Co. failed in 1883, and the works have since been run by a receiver appointed by the United States Court. A suit is now pending to oust this receiver, and if this is successful the corporation will be dissolved.

#### Machinery.

William Tod & Co., engine-builders, of Youngstown, Ohio, turned out more castings last month than in any previous month in the history of their foundry and machine plant.

The McKeesport Foundry and Machine Company, Limited, of McKeesport, Pa., with a capital of \$25,000, have applied for a charter. The company have just con-

cluded the purchase of the Penny Foundry and Machine Works of that place, and will remodel and greatly increase the capacity of the plant. Jacob Taylor is general manager of the firm and Samuel Leek is foreman.

The American Tool Works, of Cleveland, Ohio, intend to enlarge their plant and will put in a compound condensing engine of 150 to 200 horse-power. Part of this power will probably be distributed to others by electricity.

The Muskegon Iron Works Company have organized at Muskegon, Mich., with the following officers: Daniel Kerr, president; Joseph Latch, vice-president; Wm. Schergan, treasurer; Charles Kerr, secretary. The company will erect a foundry and machine-shop and engage in the general jobbing trade.

The Westinghouse Machine Company, of Pittsburgh, report business as in an extremely satisfactory condition, with good prospects ahead. The orders for May aggregate 82 engines, footing up to over 4500 horse-power, of which 2200 horse-power was for compound engines. In the first six days of June their orders had already amounted to 1000 horse-power. A continuous test of one week's run on one of these compound engines of 65 horse-power has been made by the Baldwin Locomotive Works, of Philadelphia. The engine was non-condensing and supplied from an independent boiler, and was loaded to about 75 horse-power. The gross coal fired under the boiler during the week's run averaged 2.4 pounds per horse-power per hour, which result is an extraordinary performance.

The property known as the Hinckley Locomotive Works, in Boston, which includes several large shops, has been purchased by the West End Street Railway Company, with the object of establishing an extensive electric plant to furnish power for running their entire system of electric cars, and perhaps a big power station with wires to all parts of the city.

Alexander Bros., of Philadelphia, have just finished a very large belt, made of leather, 51 inches wide, three ply, 170 feet long and weighing 2414 pounds. The belt is for M. & W. H. Nixon's paper-mill, Manayunk, Pa., and a notable feature of it is that it is made water-proof. Among last week's shipments were a 40-inch three-ply and a 36-inch three-ply leather belt to the Cambria Iron Company, Johnstown, Pa., to replace those destroyed by the flood. Previous to this they sent the same company a 40-inch leather belt, which was lost on the cars during the flood.

The Lidgerwood Mfg. Company, 96 Liberty street, New York, have found it necessary, owing to the constantly-increasing demand for their hoisting-machinery, to establish a branch house at Chicago, where they can deal directly with their large Western trade. They have just opened such an establishment at 34 and 36 West Monroe street, that city, where they will carry a large stock of their latest improved machines adapted for all hoisting purposes.

The Valley Pump Company, Easthampton, Mass., have applied their patented method of moving steam-valves to their horizontal pumps. This method is very durable and does away with all joints and links, which have a tendency to draw the rod from the horizontal line, on which it should move.

The Pusey & Jones Company, at Wilmington, Del., have just completed the steamer Chumbo, for service at Guayaquil, South America, and the steamer is now being taken apart and shipped to New York, where it will be reshipped on the



steamer Newport. The parts of the Chumbo have been boxed and numbered, and on each box is a perfect description of the contents and its location when in use, so that the bills of lading will describe a complete steamer.

We have received from Charles P. Willard & Co., 236 Randolph street, Chicago, copies of pamphlets and circulars which they have recently issued illustrating and describing their engines and boilers, steam-pumps, lubricators, boiler-feeders, &c. They manufacture the Ward patent safety yacht boiler, especially adapted for light draft and fast speed, using natural or force draft, approved by the Board of United States Supervising Inspectors. A circular is issued referring to this boiler particularly. Messrs. Willard & Co. are also builders of steam-launches, steam-yachts, tug-boats, marine engines and boilers, propeller-wheels and boat machinery. They issue a pamphlet especially dealing with this branch of their business. In it they give cuts of the Willard high-speed marine engine, propeller-wheels, steering-wheels and different types of yachts, launches, &c. They have on hand completely finished ready for immediate delivery a new 46-foot steam launch and an excursion steamer, licensed for 50 passengers, and also double 8 x 24 stern-wheel engines, which they offer for sale.

In a letter from Paris to the *Scientific American*, relative to the exposition, Joshua Rose says: "A large amount of emery-grinding machinery is shown, all embodying items of construction of distinctly American origin, with a variation of details. Of a great many of these it may be justly said that the parts that are new are not good, and the parts that are good are not new. The French show a great deal of emery-grinding machinery, and, taken as a whole, it is very creditable indeed—much of it of the very first order and original. The Tanite emery-wheel (Stroudsburg, Pa.) is a great favorite here."

#### Hardware.

The United States Wire Nail Works, Indianapolis, Ind., are on the point of removing their plant to Jackson, Ohio, where they will enjoy much better and larger facilities for the manufacture of all kinds of wire and wire nails. As a result of this change they will for a short time be out of the market, but they expect to recommence operations by August 15 in their new location.

#### Miscellaneous.

The Peerless Lead Glass Works, at Pittsburgh, were granted a charter last week. The capital stock of the company is \$60,000, divided into 1200 shares at \$50 per share. The directors are Wm. Schuette, James F. Haye, Joseph McMurtly, Michael Mullen and Fred Hartman.

The Irwin National Gas Company, of Pittsburgh, with a capital stock of \$50,000, have been granted a charter. The stockholders are C. W. Pool, Wm. Jenkins, C. I. Billheimer, J. L. Newmeyer, J. H. Cunningham, John Bricker and John D. Brown, of Irwin, and J. Z. Shellenberger, of Pittsburgh.

The books of the Mount Torry Mining Company, organized in March, have been opened in Winchester, Va., for the sale of stock, and it is stated that \$100,000 was subscribed in 24 hours. The property is being worked for manganese. B. H. Richards, of Baltimore, is president of the company, and John W. Rice, cashier of the Shenandoah Valley National Bank, of Winchester, is treasurer.

The St. Joseph Pump Company, St. Joseph, Mo., manufacturers of the Perfection Water Elevator and Purifying Pump,

on account of their increasing business are constantly enlarging their plant and increasing their facilities for the manufacture of their Perfection pump. They now have dies in the course of construction which will enable them to cut out of the raw material with one stroke of their hinge press three complete buckets or cups, instead of one, as heretofore. They have also reconstructed their machines for making the wire link from a capacity of 12 links per minute to 32.

R. B. Wigton & Sons, manufacturers of coke and fire-brick, 228 South Fourth street, Philadelphia, have received the entire order for the Nos. 1 and 2 fire-brick for the erection of the stoves and blast furnace of the Riverside Iron Works, of Wheeling, W. Va. They are now receiving sufficient orders to keep their fire-brick plant running full time, which is some evidence that the iron trade is improving.

A new ship-yard is in course of construction at Newport News, Va., which is intended as an adjunct to C. P. Huntington's vast steamship and railway interests. In addition to his transcontinental railway line, Mr. Huntington is the principal owner in the Morgan Line of steamers and the United States and Brazilian Mail Steamship Company, which run from New York to Brazil, touching at Newport News. Besides doing new work and repairs for these lines, for which alone Cramp & Sons have built five steamships during the last three years, the Newport News yard will build steel vessels of every class, and after the first year will figure as a competitor for the construction of government war-ships. The yard will be in operation by the beginning of next year, and at that time keels will be laid for two steel freight steamers of 3500 tons each. The first portion of the plant to be built will cost about \$400,000. The concern will be styled the Chesapeake and Ohio Dry Dock and Construction Company, and, although C. B. Orcutt is the president, the heaviest owner is Mr. Huntington. The buildings will include a toolshed 280 x 120 feet; blacksmith shop, 280 x 40 feet; bending platform and furnace, 300 x 120 feet; joiner, carpenter and pattern shop and mold loft, 300 x 60 feet, three stories. A machine-shop, 400 x 60 feet, fitted with tools from the ship-yard at Newburg, N. Y., which Mr. Huntington recently purchased, is already completed and in working order. There will be a brass-foundry and an iron-foundry will probably be built later. Henry Konitzky, who has been with Cramp & Sons for 15 years, recently resigned his position as superintendent of construction, and will have entire charge of the new ship-yard.

The Abendroth & Root Mfg. Company, manufacturers of spiral riveted pipe, have established a branch office at 62 South Canal street, Chicago, in charge of Smith & Knapp, for the sale of their pipe, couplings, joints, &c. They will carry a stock to supply the small trade in Chicago and tributary territory. Smith & Knapp have issued an illustrated catalogue showing the styles of pipe which they handle and giving cuts of the various fittings, as well as an illustration and description of Root's New High-Pressure Sectional Safety Boiler. The same firm manufacture the Ajax Feed-Water Purifier under Wm. H. Smith's patent, and they have issued an illustrated circular referring to its method of operation.

We have received from E. H. Sargent & Co., dealers in chemical apparatus and assayers' materials, 125 State street, Chicago, a number of samples of Swedish filtering-paper. The firm have taken the general agency for the United States for Munktel's filtering-paper. This is now supplied in the convenient form of round

filters, and in the usual sizes, in addition to the square form of sheets, and made of several grades suited to the various uses of the laboratory. A circular issued by the firm furnishes a complete description of the various qualities of the paper made and the prices at which it is furnished.

An error occurred in our reference to the reorganization of the Wayne Works, of Richmond, Ind., which was printed in the issue for June 27. The Wayne Works continue in existence at Richmond, but Thomas Creamer, formerly president of that company, withdrew from them and organized the Creamer & Scott Company, of Indianapolis. The two establishments have no connection whatever, but are separate enterprises. The Creamer & Scott Company erected a plant for the manufacture of vehicles on the corner of Eighth street and the Lake Erie and Western Railroad, in Indianapolis, and have met with such remarkable success in their undertaking that they are already compelled to enlarge their plant. The new building to be erected will be 204 feet long by 58 feet wide. They have issued a circular calling attention to their Dandy Road Cart, with double oscillating spiral spring, and to their stick-body road-wagons.

The Aerated Fuel Company, of Springfield, Mass., have recently issued circulars giving the names of establishments using their system and furnishing testimonials regarding its efficiency. Among them we observe a certificate from the superintendent of the Boston and Albany Railroad Company who are using the Bullard device for burning liquid fuel at their shops in Springfield, Mass., both for making steam and for operating furnaces in their blacksmith shop. The D. F. Jones Mfg. Company, of Gananoque, Ont., are using the system in their shovel works. The W. H. Fish Mfg. Company, of Columbus, Ohio, consider the reconstruction of their oil plant the best investment of the year. The Dominion Bridge Company, of Lachine, Quebec, furnish a very flattering testimonial. The Kalamazoo Spring and Axle Company, of Kalamazoo, Mich.; the U. S. Cartridge Company, of Lowell, Mass.; Fayette R. Plumb, of Frankford, Pa.; Russell, Burdall & Ward, Port Chester, N. Y.; the St. Louis Shovel Company, of St. Louis; the Scovill Mfg. Company, of Waterbury, Conn., and Vose & Cliff, of Nyack, N. Y., are also among the users of this system to testify to its advantages.

Extravagant predictions are made respecting Duluth since the selection of that locality for the establishment of several branches of manufacture. The *Duluth Herald* says the activity there manifested cannot be explained upon the presumption of preparation for the influx of workmen which the opening of the car-works, the steel-works and the Iron Bay works will bring. Such extensive preparation, in the way of business blocks, &c., is uncalled for as well as premature. Though the car-works will open next month, the others will not bring many operatives into town for a long time yet, and there is no present nor immediate pressing demand for the energetic haste to build a city of business blocks on account of the expected workmen who are to make West Duluth cars, mining-machinery and pig-iron. "The only explanation is that the natural advantages of Duluth are beginning to be recognized in a practical fashion, and men who wish to be on the wave which is rising to push this city to its destined place are taking practical steps to secure that result. West Duluth is to be the greatest manufacturing place in the Northwest. It has natural advantages which make this a necessary incident of the development of the Northwest."

another opportunity to visit certain departments under the guidance of their French colleagues. A number of others accepted an invitation to inspect the sewage farm at Gennevilliers, located on a bend of the Seine. After percolating through the sandy soil, the sewage is so thoroughly cleared of extraneous manure that the water flows off as clear as a mountain stream. Some of the American engineers were so much impressed by the example of their French friends that they, too, drank of the water. After a fine collation at Gennevilliers, in which water did not, however, enter to any notable degree, the party returned to Paris.

The afternoon was given over to sight-seeing, some going to the Musée Historique de la Ville de Paris, others to the Conservatoire des Arts et Métiers, others to the Hôtel des Invalides, and to the Jardin des Plantes. Your correspondent, in duty bound, felt more attracted by the exhibition. In the evening the members of the committee of the joint societies tendered a banquet, at the Hotel Continental, to their president, Henry R. Towne, of Stamford, Conn. As one of the hosts your correspondent is not in a position to discuss the merits of the dinner or report the speeches made.

The last day of the official programme as laid out by their French hosts was Wednesday. Opportunities were given to visit the most beautiful buildings in Paris, the Hôtel de Ville and the Musée des Thermes, the Hôtel de Cluny and the Bibliothèque Nationale. The afternoon was devoted to a visit to the national manufactory of porcelains at Sèvres, which, however, was confined chiefly to the inspection of the finished goods and some of the first stages of manufacturing. Your correspondent, in search of information more directly interesting to the readers of *The Iron Age*, joined a small party in a visit to the Robert steel process, which has attracted so much attention in America, where this process is now being introduced.

In the evening a general meeting of the joint societies was held at the rooms of the Société des Ingénieurs Civils, at which a number of resolutions were passed and business of interest to the excursionists was transacted.

While in London the engineers had been requested to indicate on special cards what particular subjects they were interested in. It was not generally known in what manner these would be utilized. At the end of the meeting it was found that their French hosts had provided letters of introduction for the American engineers to those persons in Paris and in other parts of France who would be most likely to be of service to them. The labor which such an effort of hospitality involved can hardly be appreciated. Struggling with all the disadvantages growing out of the difficulty of understanding the wishes of their guests, tired and distracted as many of them were, the French engineers displayed wonderful assiduity, tact and generosity.

At the meeting the programme of a visit to Dusseldorf was announced, and it was found that fully 40 members of the party would accept the invitation of the German engineers, tendered through E. Schroedter, of the Verein Deutscher Eisenhuettenleute. On Tuesday morning, July 1, a visit will be made to the basic Bessemer Steel Works, Rothe Erde, near Aix-la-Chapelle, where rails, steel ties, plates and beams are made. During the day the party will leave for Dusseldorf, where Wednesday and Thursday will be spent in inspecting a number of plants, including collieries, coal-washing plant, coke-ovens, steel-works, pipe-mills and machine-shops. Friday the visit will wind up with a trip on the Rhine to Coblenz, where the Empress Augusta, wife of the

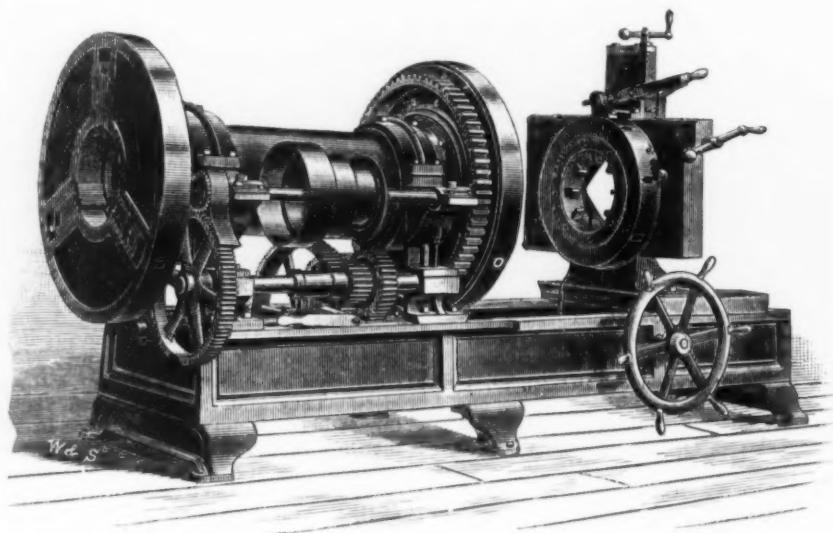
late Emperor William, has thrown open her castle for inspection and will personally receive a delegation of the engineers. Intimations have been received that the iron and steel masters of Lorraine would like to welcome the party, but the fact that many are booked on steamers sailing early in July and others will wander southward into Switzerland and Italy has made it impossible to accept an invitation.

After the close of the official programme at Paris, the eagerness of the French engineers to entertain their American guests had not exhausted itself. On Thursday afternoon, by invitation of M. Decauville, a large number visited the portable railroad works at Petitbourg.

In the evening a favored few, by invitation, attended a representation of "La Tempête," in the private box at the Grand Opera of M. Carnot, president of the French Republic, himself by profession an engineer. On Saturday evening as large a party as could be given tickets took part in the ball given by Yves Guyot, Minister

### Detroit International Fair.

In view of the extensive preparations now in progress for the International Fair and Exposition to be held at Detroit, Mich., from September 17 to September 27 inclusive, and the fact that all the important industries will be represented, a few particulars relative to it may not be without interest to our readers. The site selected consists of about 70 acres of ground located upon a commanding bluff on the bank of the Detroit River, overlooking the Canadian shore, and can be reached by water, two lines of steam-cars, several horse-car lines and an electric railway. The buildings are arranged in the form of a hollow square, the inner area being devoted to a series of courts beautifully laid out. A space of 15 acres in extent, arranged with walks and drives, will be devoted to a immense display of agricultural implements, engines, windmills, &c., sheltered under commodious structures or tents. The main building will be, it is said, the largest structure used ex-



NEW DUPLEX MACHINE FOR CUTTING AND THREADING PIPE.

of Public Works, at his official residence in the Boulevard St. Germain, for which 6000 invitations were issued.

### New Pipe-Cutting and Threading Machine.

The machine of which we herewith present an engraving is one of the most important and successful of the many placed on the market by the Bignall & Keeler Mfg. Company, of St. Louis, Mo. In it they have introduced the Peerless die-head, reversed so as to place the dies next to the gripping-chuck. It is so arranged that the dies throw open far enough to allow the pipe to pass through to the cutting-off tool without opening the die-head or even sliding it to one side on ways. It has an automatic oil-pump which forces the oil through the die-head and distributes it at the point where most needed. The gripping-chuck is of unusual strength and has three independent jaws which are graduated to the different sizes of pipe. This enables the operator to instantly center the pipe. The jaws, which have broad steel faces, are flush with the face of the chuck, thus enabling the machine to handle much shorter pieces of pipe than is usual. Crooked pipe can be easily handled in this machine. For long pipe the rear chuck is most advantageous, the front chuck being used on all short work. The gearing is all cut from the solid and runs noiselessly.

clusively for fair purposes in this country, if not in the world. A structure 300 feet long will be devoted to the interests of fowls and home pets, while the four stock buildings, each 300 feet square, will be among the finest in the country. The exposition will also boast of an art loan building having a frontage of 150 feet and containing treasures of great interest and value. A feature which will undoubtedly attract many visitors will be a half-mile track, with grand stand, refreshment booths, &c. Among the list of names of gentlemen prominently identified with the exposition is Francis Palma, president of the Galvin Brass and Iron Works, and George H. Barbour, president of the National Association of Stove Manufacturers. The exposition is expected to represent an outlay of more than \$500,000, and will offer cash prizes aggregating \$100,000.

The thirty-eighth meeting of the American Association for the Advancement of Science will be held at Toronto, Ont., beginning on Tuesday, August 27. The retiring president, Major J. W. Powell, will deliver his address on the evening of the 28th. The sessions are expected to continue until the Tuesday following, and excursions will follow extending to September 7. All matters pertaining to membership, papers and business of the association will receive attention from the permanent secretary, F. W. Putnam, Salem, Mass.



## THE WEEK.

Philadelphia is to have a new market-house on Spring Garden street, 214 x 107 feet, the walls to be of pressed brick and the trimmings of galvanized iron.

At Mobile New York capitalists and others interested are expending \$1,600,000 building a railroad and large coal and mineral docks, at which it is promised that coal can be delivered at \$2.25 per ton. The enterprise is considered important in connection with the development of Alabama's mineral resources.

The subject of manual training had a prominent place in the discussions of the New York State Teachers' Association at the Academy of Music, in Brooklyn, last week. Dr. Bradley, superintendent of the schools of Minneapolis, and formerly of Albany, said that the introduction of manual training in the Minneapolis schools had proved of incalculable benefit to the system. It was introduced three years ago, when the number of scholars was 13,000. The entire system had been recast in order to admit it. Since then the school membership had increased to 20,000, and the results, in a purely educational sense, had been such that the new feature had become permanently ingrafted upon the system. Superintendent Thomas, of Newark, and others advocated the expansion of the education of the country by the general adoption of the improved system. The members of the convention went in a body to the Pratt Institute, in Ryerson street, near De Kalb avenue, where the State exhibition of drawing and manual-training work is displayed.

R. W. Pool has closed the sale of the Ferrol, Va., iron property, containing 6000 acres, to a foreign syndicate for \$70,000 cash. The parties purchasing will take possession at once and mine and ship ore.

Over 3,000,000 feet of lumber have been bought in Cadillac, Mich., for the mammoth new plant of the Westinghouse Air Brake Company, at Wilmerding, near Pittsburgh.

That was a bold step when American investors directed their enterprise to the development of Mexico. But the prosperity of railway lines in that country vindicates their sagacity. The Mexican *Financier* says: "The Mexican Central is no longer a line of railway; it is a system of roads, and it is about to acquire feeders in that very section, its northern division, which has seemed to be the most hopeless portion of the road. Its local traffic is increasing and its freight service is energetic and progressive. A policy which identifies the corporation with the business interests of Mexico is pursued, to the profit of the mercantile, manufacturing, mining and agricultural interests of the country. The railway is a powerful element in the present prosperity of the table-land country."

The big pumps relied upon to prevent the inundation of the City of Mexico proved unavailing during the recent heavy rains.

The coinage of standard silver dollars on July 1 reached the aggregate of \$333,422,650. This is a coinage of about \$34,000,000 during the past fiscal year. At the present price of silver bullion, the \$2,000,000 worth of bullion which is required to be purchased monthly coins into about \$2,600,000, so that it appears that the Treasury has kept pretty close to the minimum requirement both under the former Administration and the new one. The silver certificates in circulation July 1 amounted to \$257,102,445 and the dollars in circulation were 54,337,967. This is

the largest amount of silver certificates ever outstanding, but the number of silver dollars in circulation has never been so small since the passage of the provision in the Appropriation act of August, 1886, authorizing the issue of certificates of small denominations.

"The Greatness of America" formed the topic of Hon. Samuel S. Cox's address at the opening of the Constitutional Convention in Dakota, 4th inst. The basis of this greatness, he said, is the broad foundation of our public lands. The speaker entered upon an analysis of our national growth during the last century, saying that immigrants arrive at Castle Garden at the rate of 18 knots an hour; the food supply has been cheapened and agriculture has made wonderful progress, the income from that source amounting to \$3,000,000,000 in 1880. Said he: "Last year our corn crop was 2,000,000,000 bushels. It was raised upon 75,672,763 acres. It would require 3,000,000 cars, with over 60,000 locomotives, in a train to draw it to the sea-board. It would take a year to pass such a train through Chicago."

The recent report from Ottawa that permission has been given the Canadian Pacific to carry goods in bond across Maine to Halifax appears to be without foundation. Until Congress is ready to indicate a policy, the Canadian Pacific will have to content itself with the privileges derived from its American connections. Both the question of allowing bonding privileges to the Canadian Pacific Railway and that of assessing a duty on Canadian cars are before the Solicitor of the Treasury for his opinion, which may not be rendered much before the meeting of Congress.

Workingmen from all parts of Alabama assembled in convention at Birmingham, 4th inst., and formally determined to ignore all political parties, simply making the issue "organized labor against capital," but asking no aid from the negro. No colored men were allowed to participate in the proceedings.

White labor for cotton mills in the South is now obtained with much less difficulty than formerly, prejudice against this occupation having been largely overcome. Parties in Galveston, Texas, who are about erecting a mill in that city, remark: "This false sentiment of pride is now rapidly disappearing, and as a result labor is easily obtained that with little training can be developed to any degree of skill."

The sugar interests of Louisville are buoyant in prospect of a cane crop probably 15 per cent. better than that of 1888, while the prices are likely to be the most remunerative realized for six years past. Some of the leading foundries of New Orleans are working with full forces night and day to meet the demands of the planters for new machinery, instigated by the condition of the cane crop. One of the local journals, speaking of the prospects, says: "It looks very much as if the thud of the trip-hammer in the city were keeping time with the puff of the sugar-mill engine in making the pace for a new march of prosperity in the sugar industry."

A lumber syndicate has bought 400,000 acres of virgin forests in the Adirondacks, extending through four counties, paying probably \$4.50 to \$5 per acre, and it is said they will treble their money.

Austin Corbin, president of the Reading Railroad, has issued orders to the effect that no members of labor organizations, excepting those of a benevolent character, will be employed in the Reading Iron Works when they resume operations.

## MANUFACTURING.

### Iron and Steel.

At a recent meeting of the Board of Directors of the Monongahela Furnace Company, recently organized at McKeesport, Pa., which was held in New York City, arrangements were made to commence work at once on the erection of two blast-furnaces at McKeesport, Pa. William B. Shiller, late of Youngstown, Ohio, was appointed business manager of the company. Wm. Glyde Wilkins, civil engineer, takes charge of all subconstruction, all grading and excavating, all foundation work, together with the laying out of the railroad system, for which he prepares plans and supervises the work. Frank C. Roberts, civil engineer, of Philadelphia, takes charge of the superstructure of the furnaces and their equipment. Engineers are now at work preparing and perfecting the plans, which when ready will be forwarded to contractors for bids upon the work to be done.

The Paige Tube Company, of Warren, Ohio, is a corporation organized under the laws of Ohio, with a capital of \$200,000, with the following officers: O. C. Barber, president; David R. Paige, vice-president; Albert T. Paige, treasurer; J. H. Faxon, Jr., secretary, and Thomas J. Bray, superintendent. The company are now very busy making alterations and improvements in the old plant of the Warren Tube Company, and expect to be in condition by October next to make and supply all sizes of lap and butt-welded iron and steel pipe from  $\frac{1}{4}$  to 10 inches inclusive, and also to supply compressed steel tubing having polished surfaces both inside and outside, and perfectly cylindrical and true to size and gauge.

The Standard Iron Company, of Bridgeport, Ohio, report business with them to be in a satisfactory condition, their orders for merchant iron being unusually large at present. They are now engaged in the erection of a brick building 50 x 140 feet and three stories in height, which will be used exclusively for their corrugating business.

The plant of the Etna Iron and Steel Company, of Bridgeport, Ohio, was closed down on the 1st inst. for the usual annual repairs, together with extensive improvements, which will require from four to six weeks' time to complete.

The holders of the first mortgage bonds of the Etna Iron Works, Ironton, Ohio, propose to foreclose the mortgage and sell the property to a new corporation, which will operate the concern and make needed improvements. The new corporation it is proposed to form on the basis of not exceeding \$1,000,000 first preferred stock, 6 per cent., cumulative; \$250,000 second preferred stock, 6 per cent., cumulative; \$400,000 common stock.

For the six months of this year ending with June 30 Soho Furnace, of the Moorehead-McCleane Company, of Pittsburgh, produced 34,657 gross tons of No. 1 pig-iron. The furnace was blown in on November 15 of last year, and has made an excellent record for a new furnace.

Up to the 29th ult. No. 2 Furnace, of the Isabella Furnace Company, at Etna, Pa., had produced 190,574 gross tons of No. 1 foundry iron on one lining, and from present indications is good for as many more tons.

We are informed that the report that Carnegie, Phipps & Co., Limited, of Pittsburgh, had sent out agents to various Eastern States to secure workmen to operate the Homestead Steel Works is without foundation. They expect to resume when ready with their old employees, or at least

with a major part of them. The firm's policy is not one of hostility to organized labor, but a question of conducting business on a basis of profit. If they cannot get the men the works will stand idle until they can.

A charter for the Republic Iron Works, Limited, of Pittsburgh, was placed on file last week. The company has been re-organized and the capital stock increased to \$600,000, divided into 6000 shares at \$100 per share. The directors are E. C. Converse, John H. Flagler, Horace Crosby, Joseph R. Jackson and W. A. Dunshee.

From a recent issue of the Youngstown, Ohio, *Telegram* we take the following: "One of the recent new improvements in the rolling-mill business is in use at the plant of the Mahoning Valley Iron Company in this city. It is a set of chill-rolls turned in such a manner that a piece of steel rail may be rolled down to any thickness necessary to the manufacture of cut nails. It has always been a puzzle among iron-makers how this could be accomplished without a lap-weld. The nails made from this steel are perfect and are being used extensively. The patentee and designer of the rolls is Sidney McCloud, of Chicago; Charles Brown, formerly of this city, but now of Hamilton, Ont., also assisted materially in designing the rolls."

The Swindell & Smythe Company, Lewis Block, Pittsburgh, Pa., have closed contracts with the following firms for gas-furnace plants: At the Paige Tube Works, formerly the Warren Tube Company, Warren, Ohio, they are completely remodeling the tube-welding and tube-bending furnaces, also the gas-producers, to their latest and special designs. It has been necessary for them to take the old furnaces down complete to the foundations and to build new ones in their place. For the Etna Iron and Steel Company, Bridgeport, Ohio, they will build some of their most improved regenerative gas-heating furnaces, also an artificial gas-producing plant. They have also contracted with the Standard Mfg. Company, Allegheny City, to build for them three melting-furnaces and a large enameling-furnace to run with natural gas.

Carnegie, Phipps & Co., Limited, of Pittsburgh, have commenced the manufacture of wrought-iron turn buckles. At present they are prepared to furnish from 1-inch to 14-inch inclusive. Other sizes will be added as rapidly as possible.

The Pittsburgh Bridge Company, of Pittsburgh, have received the contract for rebuilding the bridges at Blairsville and Nineveh destroyed by the Johnstown flood. The contract price is \$325,000 for both bridges.

A press dispatch from Conshohocken, Pa., under date of the 3d inst., says: "The blast-furnace of McHose & Sons, at Norristown, chilled last night, for the third time within a period of six months. The first accident occurred in January. The salamander which formed was removed by exploding dynamite in it. The stack was relined and operations were resumed. About four weeks ago operations had to be suspended again, and dynamite was once more resorted to for loosening the chilled metal. Again the stack was relined, and yesterday the furnace was put in blast, with every belief that the firm would enjoy a successful run. Before night the gas poured through the crevices of a portion of the old brick-work, and the casing outside became red-hot, and it was impossible to drive sufficient heat to the top. This morning it was announced that the furnace had chilled. These misfortunes are very discouraging to McHose & Sons, but it is said they will go to work at once

to prepare for a resumption as soon as possible. It is believed the dynamite unsettled the brick-work and caused the leak through the masonry."

Gordon, Strobel & Laureau, Limited, of Philadelphia, have closed a contract for a 12 x 50 charcoal furnace to be erected at Jefferson, Texas, by Chicago parties. The work will be completed in about six months.

C. Y. Wheeler & Co., of Pittsburgh, who have operated the Sterling Steel Works, at Demmler, Pa., for five years, under lease from Charles Jones, the owner of the plant, have purchased the same for \$28,000 and will enlarge and remodel it. The company recently increased their capital stock to \$150,000.

The blast-furnace at Tonawanda, near Buffalo, N. Y., is to be put in blast about August 1 by the Tonawanda Iron and Steel Company. This furnace was built by the Niagara River Iron Company in 1873, but was in blast only a short time. It is 16 x 61 feet in size, supplied with Ford stoves, and the equipment has been kept in good order. Under the new management Lake Superior and Lake Champlain ores will be used, with coke as fuel. The new company expect it to turn out 100 tons of strong foundry pig-iron daily. The president of the company is William A. Rogers; vice-president, Archer Brown; secretary and treasurer, J. S. Willett; general manager, F. B. Baird. Rogers, Brown & Co., of Cincinnati, will be sales agents.

The Redemann-Tilford Steel Company, of Louisville, Ky., have issued a pamphlet of 21 pages setting forth the merits of the process owned by the company and quoting a large number of testimonials to the excellence of the steel which have been furnished by prominent steel manufacturing and consuming establishments in various parts of the country. The Redemann-Tilford process consists in the conversion of Bessemer or other low-grade steel into high-grade steel, avoiding the expensiveness of the processes in general use for the manufacture of steels of the best quality. The results which are given in this pamphlet are remarkable, the testimonials coming from persons of very high standing in the iron and steel trades. The company are offering for sale a limited amount of their stock for the purpose of erecting a plant to put their process in operation.

The Beaver Valley Mfg. Company, Limited, West Bridgewater, Pa., expect to soon have their new open-hearth steel-foundry in operation. They are putting in a 10-ton Ridgway steam hydraulic balanced crane and when this is erected will run their works to their full capacity.

A decision was rendered in the Common Pleas Court at Youngstown, July 6, in the case brought by the creditors of Brown, Bonnell & Co., a rolling-mill corporation. The court held that the corporation should be dissolved and a receiver appointed. Brown, Bonnell & Co. failed in 1883, and the works have since been run by a receiver appointed by the United States Court. A suit is now pending to oust this receiver, and if this is successful the corporation will be dissolved.

#### Machinery.

William Tod & Co., engine-builders, of Youngstown, Ohio, turned out more castings last month than in any previous month in the history of their foundry and machine plant.

The McKeesport Foundry and Machine Company, Limited, of McKeesport, Pa., with a capital of \$25,000, have applied for a charter. The company have just con-

cluded the purchase of the Penny Foundry and Machine Works of that place, and will remodel and greatly increase the capacity of the plant. Jacob Taylor is general manager of the firm and Samuel Leek is foreman.

The American Tool Works, of Cleveland, Ohio, intend to enlarge their plant and will put in a compound condensing engine of 150 to 200 horse-power. Part of this power will probably be distributed to others by electricity.

The Muskegon Iron Works Company have organized at Muskegon, Mich., with the following officers: Daniel Kerr, president; Joseph Latch, vice-president; Wm. Schergan, treasurer; Charles Kerr, secretary. The company will erect a foundry and machine-shop and engage in the general jobbing trade.

The Westinghouse Machine Company, of Pittsburgh, report business as in an extremely satisfactory condition, with good prospects ahead. The orders for May aggregate 82 engines, footing up to over 4500 horse-power, of which 2200 horse-power was for compound engines. In the first six days of June their orders had already amounted to 1000 horse-power. A continuous test of one week's run on one of these compound engines of 65 horse-power has been made by the Baldwin Locomotive Works, of Philadelphia. The engine was non-condensing and supplied from an independent boiler, and was loaded to about 75 horse-power. The gross coal fired under the boiler during the week's run averaged 2.4 pounds per horse-power per hour, which result is an extraordinary performance.

The property known as the Hinckley Locomotive Works, in Boston, which includes several large shops, has been purchased by the West End Street Railway Company, with the object of establishing an extensive electric plant to furnish power for running their entire system of electric cars, and perhaps a big power station with wires to all parts of the city.

Alexander Bros., of Philadelphia, have just finished a very large belt, made of leather, 51 inches wide, three ply, 170 feet long and weighing 2414 pounds. The belt is for M. & W. H. Nixon's paper-mill, Manayunk, Pa., and a notable feature of it is that it is made water-proof. Among last week's shipments were a 40-inch three-ply and a 36-inch three-ply leather belt to the Cambria Iron Company, Johnstown, Pa., to replace those destroyed by the flood. Previous to this they sent the same company a 40-inch leather belt, which was lost on the cars during the flood.

The Lidgerwood Mfg. Company, 96 Liberty street, New York, have found it necessary, owing to the constantly-increasing demand for their hoisting-machinery, to establish a branch house at Chicago, where they can deal directly with their large Western trade. They have just opened such an establishment at 34 and 36 West Monroe street, that city, where they will carry a large stock of their latest improved machines adapted for all hoisting purposes.

The Valley Pump Company, Easthampton, Mass., have applied their patented method of moving steam-valves to their horizontal pumps. This method is very durable and does away with all joints and links, which have a tendency to draw the rod from the horizontal line, on which it should move.

The Pusey & Jones Company, at Wilmington, Del., have just completed the steamer Chumbo, for service at Guayaquil, South America, and the steamer is now being taken apart and shipped to New York, where it will be reshipped on the



steamer Newport. The parts of the Chumbo have been boxed and numbered, and on each box is a perfect description of the contents and its location when in use, so that the bills of lading will describe a complete steamer.

We have received from Charles P. Willard & Co., 236 Randolph street, Chicago, copies of pamphlets and circulars which they have recently issued illustrating and describing their engines and boilers, steam-pumps, lubricators, boiler-feeders, &c. They manufacture the Ward patent safety yacht boiler, especially adapted for light draft and fast speed, using natural or force draft, approved by the Board of United States Supervising Inspectors. A circular is issued referring to this boiler particularly. Messrs. Willard & Co. are also builders of steam-launches, steam-yachts, tug-boats, marine engines and boilers, propeller-wheels and boat machinery. They issue a pamphlet especially dealing with this branch of their business. In it they give cuts of the Willard high-speed marine engine, propeller-wheels, steering-wheels and different types of yachts, launches, &c. They have on hand completely finished ready for immediate delivery a new 46-foot steam launch and an excursion steamer, licensed for 50 passengers, and also double 8 x 24 stern-wheel engines, which they offer for sale.

In a letter from Paris to the *Scientific American*, relative to the exposition, Joshua Rose says: "A large amount of emery-grinding machinery is shown, all embodying items of construction of distinctly American origin, with a variation of details. Of a great many of these it may be justly said that the parts that are new are not good, and the parts that are good are not new. The French show a great deal of emery-grinding machinery, and, taken as a whole, it is very creditable indeed—much of it of the very first order and original. The Tanite emery-wheel (Stroudsburg, Pa.) is a great favorite here."

#### Hardware.

The United States Wire Nail Works, Indianapolis, Ind., are on the point of removing their plant to Jackson, Ohio, where they will enjoy much better and larger facilities for the manufacture of all kinds of wire and wire nails. As a result of this change they will for a short time be out of the market, but they expect to recommence operations by August 15 in their new location.

#### Miscellaneous.

The Peerless Lead Glass Works, at Pittsburgh, were granted a charter last week. The capital stock of the company is \$60,000, divided into 1200 shares at \$50 per share. The directors are Wm. Schuette, James F. Haye, Joseph McMurty, Michael Mullen and Fred Hartman.

The Irwin National Gas Company, of Pittsburgh, with a capital stock of \$50,000, have been granted a charter. The stockholders are C. W. Pool, Wm. Jenkins, C. I. Billheimer, J. L. Newmeyer, J. H. Cunningham, John Bricker and John D. Brown, of Irwin, and J. Z. Shellenberger, of Pittsburgh.

The books of the Mount Torrey Mining Company, organized in March, have been opened in Winchester, Va., for the sale of stock, and it is stated that \$100,000 was subscribed in 24 hours. The property is being worked for manganese. B. H. Richards, of Baltimore, is president of the company, and John W. Rice, cashier of the Shenandoah Valley National Bank, of Winchester, is treasurer.

The St. Joseph Pump Company, St. Joseph, Mo., manufacturers of the Perfection Water Elevator and Purifying Pump,

on account of their increasing business are constantly enlarging their plant and increasing their facilities for the manufacture of their Perfection pump. They now have dies in the course of construction which will enable them to cut out of the raw material with one stroke of their hinge press three complete buckets or cups, instead of one, as heretofore. They have also reconstructed their machines for making the wire link from a capacity of 12 links per minute to 32.

R. B. Wigton & Sons, manufacturers of coke and fire-brick, 228 South Fourth street, Philadelphia, have received the entire order for the Nos. 1 and 2 fire-brick for the erection of the stoves and blast furnace of the Riverside Iron Works, of Wheeling, W. Va. They are now receiving sufficient orders to keep their fire-brick plant running full time, which is some evidence that the iron trade is improving.

A new ship-yard is in course of construction at Newport News, Va., which is intended as an adjunct to C. P. Huntington's vast steamship and railway interests. In addition to his transcontinental railway line, Mr. Huntington is the principal owner in the Morgan Line of steamers and the United States and Brazilian Mail Steamship Company, which run from New York to Brazil, touching at Newport News. Besides doing new work and repairs for these lines, for which alone Cramp & Sons have built five steamships during the last three years, the Newport News yard will build steel vessels of every class, and after the first year will figure as a competitor for the construction of government war-ships. The yard will be in operation by the beginning of next year, and at that time keels will be laid for two steel freight steamers of 3500 tons each. The first portion of the plant to be built will cost about \$400,000. The concern will be styled the Chesapeake and Ohio Dry Dock and Construction Company, and, although C. B. Orcutt is the president, the heaviest owner is Mr. Huntington. The buildings will include a toolshed 280 x 120 feet; blacksmith shop, 280 x 40 feet; bending platform and furnace, 300 x 120 feet; joiner, carpenter and pattern shop and mold loft, 300 x 60 feet, three stories. A machine-shop, 400 x 60 feet, fitted with tools from the ship-yard at Newburg, N. Y., which Mr. Huntington recently purchased, is already completed and in working order. There will be a brass-foundry and an iron-foundry will probably be built later. Henry Konitzky, who has been with Cramp & Sons for 15 years, recently resigned his position as superintendent of construction, and will have entire charge of the new ship-yard.

The Abendroth & Root Mfg. Company, manufacturers of spiral riveted pipe, have established a branch office at 62 South Canal street, Chicago, in charge of Smith & Knapp, for the sale of their pipe, couplings, joints, &c. They will carry a stock to supply the small trade in Chicago and tributary territory. Smith & Knapp have issued an illustrated catalogue showing the styles of pipe which they handle and giving cuts of the various fittings, as well as an illustration and description of Root's New High-Pressure Sectional Safety Boiler. The same firm manufacture the Ajax Feed-Water Purifier under Wm. H. Smith's patent, and they have issued an illustrated circular referring to its method of operation.

We have received from E. H. Sargent & Co., dealers in chemical apparatus and assayers' materials, 125 State street, Chicago, a number of samples of Swedish filtering-paper. The firm have taken the general agency for the United States for Munkell's filtering-paper. This is now supplied in the convenient form of round

filters, and in the usual sizes, in addition to the square form of sheets, and made of several grades suited to the various uses of the laboratory. A circular issued by the firm furnishes a complete description of the various qualities of the paper made and the prices at which it is furnished.

An error occurred in our reference to the reorganization of the Wayne Works, of Richmond, Ind., which was printed in the issue for June 27. The Wayne Works continue in existence at Richmond, but Thomas Creamer, formerly president of that company, withdrew from them and organized the Creamer & Scott Company, of Indianapolis. The two establishments have no connection whatever, but are separate enterprises. The Creamer & Scott Company erected a plant for the manufacture of vehicles on the corner of Eighth street and the Lake Erie and Western Railroad, in Indianapolis, and have met with such remarkable success in their undertaking that they are already compelled to enlarge their plant. The new building to be erected will be 204 feet long by 58 feet wide. They have issued a circular calling attention to their Dandy Road Cart, with double oscillating spiral spring, and to their stick-body road-wagons.

The Aerated Fuel Company, of Springfield, Mass., have recently issued circulars giving the names of establishments using their system and furnishing testimonials regarding its efficiency. Among them we observe a certificate from the superintendent of the Boston and Albany Railroad Company who are using the Bullard device for burning liquid fuel at their shops in Springfield, Mass., both for making steam and for operating furnaces in their blacksmith shop. The D. F. Jones Mfg. Company, of Gananoque, Ont., are using the system in their shovel works. The W. H. Fish Mfg. Company, of Columbus, Ohio, consider the reconstruction of their oil plant the best investment of the year. The Dominion Bridge Company, of Lachine, Quebec, furnish a very flattering testimonial. The Kalamazoo Spring and Axle Company, of Kalamazoo, Mich.; the U. S. Cartridge Company, of Lowell, Mass.; Fayette R. Plumb, of Frankford, Pa.; Russell, Burdall & Ward, Port Chester, N. Y.; the St. Louis Shovel Company, of St. Louis; the Scovill Mfg. Company, of Waterbury, Conn., and Vose & Cliff, of Nyack, N. Y., are also among the users of this system to testify to its advantages.

Extravagant predictions are made respecting Duluth since the selection of that locality for the establishment of several branches of manufacture. The Duluth *Herald* says the activity there manifested cannot be explained upon the presumption of preparation for the influx of workmen which the opening of the car-works, the steel-works and the Iron Bay works will bring. Such extensive preparation, in the way of business blocks, &c., is uncalled for as well as premature. Though the car-works will open next month, the others will not bring many operatives into town for a long time yet, and there is no present nor immediate pressing demand for the energetic haste to build a city of business blocks on account of the expected workmen who are to make West Duluth cars, mining-machinery and pig-iron. "The only explanation is that the natural advantages of Duluth are beginning to be recognized in a practical fashion, and men who wish to be on the wave which is rising to push this city to its destined place are taking practical steps to secure that result. West Duluth is to be the greatest manufacturing place in the Northwest. It has natural advantages which make this a necessary incident of the development of the Northwest."

# The Iron Age

New York, Thursday, July 11, 1889.

DAVID WILLIAMS, - - - PUBLISHER AND PROPRIETOR.  
CHAS. KIRCHHOFF, JR., - - EDITOR.  
GEO. W. COPE, - - - ASSOCIATE EDITOR, CHICAGO.  
RICHARD R. WILLIAMS - - - HARDWARE EDITOR.  
JOHN S. KING, - - - BUSINESS MANAGER.

## Commercial Rivalries in Africa.

Struggles for commercial ascendancy in Africa by European traders of various nationalities cause perpetual turmoil on some part of the Dark Continent. The latest instance of conflicting interests occurs at Delagoa Bay, the Portuguese headquarters on the eastern coast, about midway between Zanzibar and Cape Town and not far from the flourishing port of Natal. England, the cables inform us, has already dispatched naval vessels to Delagoa Bay to protect the rights of British subjects threatened with spoliation. From various sources advices are received to the effect that the Portuguese have suddenly determined to rescind a concession to certain English capitalists, with whom at the outset an American of some local repute in London was associated. The Delagoa Bay Railroad, it is affirmed, was not finished up to the mountains on the Transvaal frontier in accordance with the terms of the concession—the engineering difficulties at that point being very serious—and this allegation constitutes the *gravamen* of the charge on which is based the act of the Government virtually dispossessing the entire management, if not actually confiscating the property.

The motive for this arbitrary proceeding is found in the long ill-concealed fears of English influence to the prejudice of rival projects, each designed to reach out for the rich treasures of the interior, the newly discovered gold of the Transvaal, and the stores of ivory, gum, spices and valuable forest products of the remote interior. There was reason to apprehend that in the event of a connection with the Cape system of inland transportation, English ascendancy would become established. Just on this point we have before us a letter from Pretoria, the capital of the Transvaal, throwing a flood of light. The writer says:

The Delagoa Bay Railroad has been talked of for many years, but although it is finished from the bay to within a few miles of the border of the Transvaal, not a mile is yet laid in the State. Now, however, that railroad-building is going on in Pretoria, a hope is entertained that the road will soon be built. The Government will not listen to any overtures for a connection by rail with either Cape Town or Durban Natal, preferring to connect with the railroad through Portuguese possessions, and run the risk of Delagoa Bay fevers. But the time cannot be far distant when the capital of the Transvaal will from necessity be connected with the Cape Colony and Natal.

This acknowledged hostility of the Transvaal authorities to suspected British encroachments affords substantial grounds for the intimation that the Portuguese, in league with the Transvaalers, who are largely of Holland descent, have been influenced by German speculators to proceed at once to summary measures of ejectment. This end accomplished, the promised highway from the sea-board to the traffic of the interior will be completed under auspices

more congenial. The question, therefore, appears to be, at least if viewed from the English stand-point, Shall Great Britain or Germany dominate in that section of Southern Africa? In truth, carving up Africa among the traders, each of whom wants a Transcontinental slice, presents difficulties as embarrassing as the old question of the partition of Turkey.

## New England Asking Lower Duties.

A petition to the New England Senators and Representatives in Congress is being circulated for signatures among the proprietors or managers of iron-working establishments in that section. In this petition the New England members of Congress are asked to insist upon the incorporation of the following provisions in any revised tariff law that shall be enacted:

First, that iron ore, coal and coke shall be put upon the free-list, as they were before the war. Second, that the duty upon pig-iron and scrap-iron and scrap-steel which prevailed immediately before the war be restored, to wit—a duty of 24 per cent. ad valorem.

In connection with the petition is printed a pamphlet of 14 pages setting forth the reasons why the signers of the petition urge the changes in duties which they advocate. In this pamphlet statistics are presented to show how New England has been shut out by the operations of the tariff laws from securing supplies of crude materials at rates which would permit competition in the manufacture of iron and steel with other sections of the country. The tendency, it is asserted, has been to throw all the manufacturing, manipulating and finishing of iron and steel, as well as the production of pig-iron, into the hands of the iron-producing States, and to wipe out the iron and steel industries, large and small, of New England. It is further admitted that the surviving mills owe their continued existence, in a small part, to the fact that they have been able to pick up and rework a little old material (scrap-iron, castings and turnings) in their own territory, but chiefly to the fact that they have, through the compulsion of circumstances, been systematically engaged in the degradation of American labor in New England. Yet this resource has been so inefficient in retaining the manufacture of iron in New England that the annual production of iron and steel has dwindled 40 per cent. since 1879, while throughout the country as a whole the production of rolled iron and steel has increased 57 per cent. in the same period.

Passing to details, the case of coal is taken up. The New England mills were formerly supplied with bituminous coal from the Canadian provinces exclusively free of duty. The duty of 75 cents per ton now compels them to purchase their coal from Pennsylvania and Maryland. The freight from mines to mills is now about \$3 per ton, while from the Canadian mines to the mills it would be but \$1.50, thus making a disadvantage to the New England manufacturer of \$1.50 per ton. With the existing duty the Canadian mine-owner has no encouragement to equip his mines with the modern machinery necessary to the cheap production of coal. Therefore the abolition of the duty on coal is asked.

The duty upon iron ore of 75 cents per ton is claimed to be the cause of the build-

ing up of an enormous monopoly of the steel business of America upon the line of travel from the coke fields to the Lake Superior iron-ore mines and discouraging the manufacture of Bessemer pig-iron in Eastern Pennsylvania, New York and New Jersey. The abolition of this duty is consequently demanded. With reference to the duties on scrap-iron, scrap-steel and pig-iron, a very elaborate argument in favor of their reduction is made. It is claimed that the tariff should allow crude iron to be as cheap on the coast as it is in the interior, in order that New England men may manufacture and finish the iron that New England uses, and that she may not be set back in civilization by the impediments arising from the lack of cheap iron and steel. Even the railroads are shown to be discriminating against the iron and steel industries of New England. For instance, the Pennsylvania Railroad Company transported nails in December, 1888, from Pittsburgh to Boston for \$3.04 per net ton, and hauled old rails back from Boston to Pittsburgh at \$2.86 per net ton, but the rate on coke from Connellsville to Boston was \$4 per net ton at the same time. The carload of nails (240 kegs) was worth about \$500, while the carload of coke (24,000 pounds) was worth about \$18. Thus the Pittsburgh manufacturer was enabled to deliver his product in New England at a low rate for transportation, as well as to receive old rails at low cost, while the New England manufacturer was compelled to pay a disproportionately high rate for his raw material traversing the same route.

It is further claimed that small regard for the interests of New England has ever been shown in the making of the iron and steel tariffs. "The earlier legislation compelled her to have the manufacturing of her iron and steel done largely in England and Germany. The existing tariff turns it over to Pennsylvania. A just and equitable tariff will enable her to do it at home and will permit her iron and steel to be as cheap as they are in Alabama or Pennsylvania." Writing to us upon this subject, a very prominent New England iron and steel manufacturer says:

This petition is not a partisan document circulated for political effect, but is the protest of people engaged in the iron business who believe that the failure to make a reduction in the tariff corresponding with the heavy decline (say \$30 per ton since 1872) in the price of iron is subjecting them and their section of the country to large injury, and that in the coming adjustment of the tariff by the party in power a fair consideration should be given to the claims of the coast States as well as to those of the iron-producing States. The document is therefore being signed by Republicans and Protectionists as well as by Democrats and tariff reformers, and is, in fact, a local and sectional rather than a partisan document.

This movement on the part of New England iron and steel manufacturers is a natural development of the progress of the times. It is in harmony with the uneasiness shown in other lines which have been affected by the development of manufactures in the South and West. Recent years have been most prolific of manufacturing enterprises audacious in their scope, yet well established with reference to securing the necessary elements for cheap production. Sections of the country once thought to be inextricably enchain- ed to the older and richer portions have discovered their own strength, and



not only made themselves industrially independent, but are in turn competing successfully with those who once supplied them. It is not strange that in this summary upsetting of long-established trade relations those who are being worsted should seek a remedy. The New England manufacturers believe that they will secure relief through the revision of the tariff. It remains to be seen whether the newer manufacturing sections will consent to the desired reductions in iron and steel duties or will vigorously oppose them in order to retain control of the entire home market.

#### Condition of Blast-Furnaces July 1.

The reports which have just been received from the furnaces indicate that the shrinkage in production shown in our last monthly statement was due to but temporary causes. The furnaces at Johnstown, Pa., for instance, were then stopped on account of the flood, and it was not known definitely how long they would be banked. A few other furnaces in Pennsylvania were similarly situated. At the same time quite a number of stacks were blown out for repairs, so that the conjunction of such events caused a decreased capacity of active furnaces. Now, however, the situation has changed and production has reverted to about its former volume. The details with reference to the movements of individual furnaces will be found below in their proper connection. Attention is called to the fact that quite a considerable number of either new furnaces, old furnaces long idle or furnaces which have suspended operations for repairs will be blown in this month or early in August, so that an increased production of pig-iron is almost assured. The condition of all the furnaces in the country on July 1, as compared with May 1 and June 1, was as follows:

	Total stacks.	In blast.	Capacity per week.	Out of blast.	Capacity per week.
July 1.....	544	285	141,419	259	69,367
June 1.....	545	286	137,119	259	73,856
May 1.....	545	286	144,343	249	64,762

The condition of the anthracite furnaces in the several geographical divisions was as follows on the 1st of the current month:

#### Anthracite Furnaces July 1.

Location of furnaces.	Total number of stacks.	Number in blast.	Capacity per week.	Number out of blast.	Capacity per week.
New York.....	23	11	3,607	12	3,841
New Jersey.....	14	4	1,867	10	3,604
Spiegel.....	3	3	218	0	0
Pennsylvania:					
Lehigh Valley.....	46	24	8,770	22	7,753
Spiegel.....	1	1	75	0	0
Schuylkill Valley.....	32	14	4,962	18	5,231
U. S. Susquehanna Valley.....	17	7	2,724	10	1,753
Lebanon Valley.....	16	15	7,573	1	208
L. S. Susquehanna Valley.....	21	10	4,326	11	2,582
Totals.....	173	89	34,143	84	24,972

For a year past our records show the following:

	Furnaces in blast.	Capacity per week.
July 1.....	89	34,142
June 1.....	91	34,386
May 1.....	95	35,315
April 1.....	102	37,077
March 1.....	103	37,937
February 1.....	107	39,187
January 1, 1889.....	107	38,726
December 1, 1888.....	99	34,879
November 1.....	95	33,645
October 1.....	95	33,728
September 1.....	92	33,541
August 1.....	93	33,367

While the changes thus indicated in the number and capacity of active anthracite furnaces are unimportant, it may be remarked that we have been informed of a goodly number of furnaces which are in readiness to be blown in as soon as the condition of the iron trade will appear to warrant it. In New York and New Jersey nothing worthy of note has occurred among the anthracite furnaces. In the Lehigh Valley another Glendon stack has been blown in, as well as the Thomas Iron Company's Keystone. In the Schuylkill Valley the Lucinda was out on July 1, but was blown in on the 2d. The Norris-town is out of blast, but only temporarily. In the Upper Susquehanna district Dun-cannon was blown out June 7 to reline, but it is uncertain when operations will be resumed. Marshall was chilled by the flood June 1, but will blow in again about August 1. Union was also chilled by high water at the same time, but is to be ready for resumption by September 1. In the Lower Susquehanna both Paxton stacks are now out. All the furnaces of the Pennsylvania Steel Company are running, but they were banked for two-thirds of June on account of the flood.

The following table shows the condition of the coke furnaces on the 1st of the present month:

#### Coke Furnaces July 1.

Location of furnaces.	Total number of stacks.	Number in blast.	Capacity per week.	Number out of blast.	Capacity per week.
New York.....	3	0	0	3	3,377
Pennsylvania:					
Pittsburgh district.....	19	18	21,056	1	1,462
Spiegel.....	1	1	488	0	0
Shenango Valley.....	19	14	10,073	5	2,856
Juniata and Conemaugh valleys.....	17	9	4,825	8	2,485
Spiegel.....	1	1	700	0	0
Youghi. Valley.....	5	4	1,622	1	730
Miscellaneous.....	4	3	1,686	1	650
Maryland.....	1	0	0	1	179
West Virginia.....	6	3	2,418	3	488
Ohio:					
Mahoning Valley.....	14	11	8,700	3	1,738
Central and Northern.....	16	11	7,706	5	3,764
Hocking Valley.....	14	3	1,079	11	3,563
Hanging Rock.....	13	6	1,720	7	1,410
Indiana.....	2	0	0	2	389
Illinois.....	12	8	9,570	4	2,425
Spiegel.....	1	1	600	0	0
Wisconsin.....	4	2	1,000	2	850
Missouri.....	6	2	1,094	4	2,218
Colorado.....	2	0	0	2	940
The South:					
Virginia.....	12	8	3,887	4	1,480
Kentucky.....	4	2	537	2	630
Alabama.....	26	21	13,278	5	2,262
Tennessee.....	11	7	3,900	4	1,300
Georgia.....	2	1	609	1	310
Totals.....	215	136	96,548	79	35,406

As compared with previous months the furnaces in blast show the following record:

	Furnaces in blast.	Capacity per week.
July 1.....	136	96,548
June 1.....	135	91,771
May 1.....	147	98,399
April 1.....	151	100,060
March 1.....	150	100,757
February 1.....	150	98,518
January 1, 1889.....	157	106,726
December 1, 1888.....	151	101,748
November 1.....	146	94,695
October 1.....	137	85,461
September 1.....	133	81,082
August 1.....	122	74,855

In New York the Troy stack recently in blast is now out for relining. The furnace at Tonawanda, near Buffalo, which was long regarded as abandoned, although its machinery was carefully looked after, is now being prepared for a blast, and will probably start up on coke about August 1. We have not yet added this to the number of active stacks. Raney & Berger will

blow in their new furnace in the Shenango Valley, Pennsylvania, next week. Both of the Sharon Iron Company's stacks are now out of blast. In Virginia the large Victoria, so long idle, is put down for a positive resumption some time this month. The Virginia Iron and Nail Works Company's furnace was blown out for repairs. Riverside, in West Virginia, will soon be completely overhauled and improved. Norton, in Kentucky, is out for repairs, and will not be blown in for three months. In Alabama the Mary Pratt, which has been in the hands of repairers since January, will blow in this month, and is expected to make 75 tons per day, an increase of 25 tons. One of the new coke stacks at An-niston will be started early in August with a weekly capacity rated at 1000 tons. In Tennessee one of the Rockwood stacks is now out.

All the furnaces in Allegheny County, Pa., are now in blast, with the exception of one—Lucy—and it will probably be ready for blast the latter part of this month. The new stack of the Carrie Furnace Company is just about finished, and it will be blown in between the 15th and 20th.

The condition of the charcoal furnaces of the country was as follows at the beginning of the month:

#### Charcoal Furnaces July 1.

Location of furnaces.	Total number of stacks.	Number in blast.	Capacity per week.	Number out of blast.	Capacity per week.
New England.....	14	8	670	6	420
New York.....	10	3	412	7	520
Pennsylvania.....	23	4	310	19	749
Maryland.....	8	3	325	5	240
Virginia.....	23	4	250	19	696
West Virginia.....	3	0	0	3	165
Ohio.....	13	6	324	7	351
Kentucky.....	1	1	220	0	0
North Carolina.....	1	1	70	1	70
Tennessee.....	2	5	1,331	3	300
Georgia.....	2	0	0	2	114
Alabama.....	9	8	1,588	1	210
Michigan.....	25	9	3,091	16	3,950
Missouri.....	3	2	596	1	213
Wisconsin.....	7	2	1,011	5	891
Texas.....	1	1	173	0	0
California.....	1	0	0	1	129
Washington.....	1	1	175	0	0
Oregon.....	1	1	181	0	0
Totals.....	156	60	10,727	96	8,989

The condition of the charcoal furnaces shows but slight changes. The following table presents their record for the past year:

	Furnaces in blast.	Capacity per week.
July 1.....	60	10,727
June 1.....	60	10,962
May 1.....	54	10,629
April 1.....	53	10,173
March 1.....	55	11,081
Feb. 1.....	62	11,219
Jan. 1.....	67	11,946
Dec. 1.....	71	12,286
Nov. 1.....	73	12,724
Oct. 1.....	71	11,619
Sept. 1.....	67	11,243
Aug. 1.....	65	11,137

Although, as above indicated, aggregates have not been changed, there were more than the usual number of individual changes during the past month. One more of the Richmond stacks in Massachusetts was put in blast. In Pennsylvania the Chestnut Grove is reported out, the Carlisle has blown in, the Isabella is out, but will be in again within eight weeks, and the Mont Alto, which was burned April 30, is being rebuilt, with the expectation of being ready for blast by October. In Maryland the A Furnace of the Stickney

Iron Company was blown out. Foster's Falls Furnace, in Virginia, blows in this month. In Kentucky the Bellefonte was blown in to run for the balance of the season, and the Hunnewell has been stopped temporarily since July 1. In Alabama the Tecumseh is out for repairs, which will require about three weeks. In Texas the Old Alcalde, which was blown out June 3, resumed on the 29th. In Ohio the Madison was blown out June 29 for repairs estimated to require a month. Several of the Michigan furnaces now out are to be blown in this month—Newberry, Gaylord and the Detroit Iron Furnace Company's stack. Peninsular reports entering its thirty-eighth month of continuous blowing, and the furnace will not be blown out until it is absolutely necessary. In Wisconsin the Minneapolis is out for repairs, and the National, having completed its repairing, blows in this month.

Our furnace reports for July 1 have been unusually full and complete, and we have to thank the owners and managers of furnaces for their very cordial response to our requests for information. Their courtesy in this regard is most thoroughly appreciated.

#### South African Industrial Interests.

In connection with the British and Portuguese dispute regarding African matters which is now absorbing much attention throughout the world, it is interesting to note the importance of South African mining and other promising enterprises. Not only English South Africa, embracing the Cape Colony, Natal and British Bechuanaland, but the Orange Free State, Zululand and the Transvaal Republic are all more or less rich in valuable minerals or—as for example Natal—abundantly produce sugar and other tropical commodities. The white population in all of them is either English or "Boers," the original settlers from Holland, who have preserved their Dutch nationality indirectly by still speaking the ancestral language. Their independent anti-British spirit has led to the formation of the Orange Free State and Transvaal Republic. The continued large production in those regions of diamonds and gold and to some extent of copper, together with wool-growing and ostrich-breeding on a large scale and rapidly-increasing sugar production have caused a growing interest to be felt in England and elsewhere in the immediate and eventual future of all the countries we have named. Sir Hercules Robinson, the retiring governor of the Cape Colony, recently delivered a very outspoken farewell speech at Cape Town, which attracted much attention in England, and was even made the subject of parliamentary inquiries. He stated, among other things:

From a very early period of my administration I cast longing eyes upon the high, healthy, central plateau to the north of Cape Colony, which, as the gate to the interior of South and Central Africa, seemed to me of infinitely greater importance than the fever-stricken mangrove swamps on the east coast or the sandy, waterless fringe on the west. I accordingly devoted my best efforts to the acquisition of that territory. For a time my advocacy was as the voice of one crying in the wilderness, but the ultimate result has been that instead of the Cape Colony being, as it were, hide-bound and shut in on the north by a foreign power, we have to-day in that direction, first, the Crown Colony of British Bech-

uanaland, next the Bechuanaland Protectorate, extending to the twenty-second degree of south latitude, and beyond it the exclusive sphere of British influence extending to the Zambesi.

Whatever may be the political future of South Africa, there can be no doubt that it is a country of surpassing interest and promise. It combines natural advantages which are not to be found in conjunction in any other part of the world. It possesses a magnificent climate, vast pastoral and agricultural resources and mineral wealth which has apparently no rival in any other quarter of the globe. Even its varied population, now supposed to be its weakness, will eventually prove a source of wealth and strength. In its native population it has a never-failing supply of cheap labor, while the blending of the two European families will produce a race which will be no whit inferior to any in the world. Why should there be any jealousy or animosity between the Dutch and English? They have fought shoulder to shoulder on many a battle-field. The Dutch gave to us one of the best of our English kings—the true patron of civil and religious freedom—and the two races have ever been alike conspicuous for their love of liberty, for their patient industry and for their deep-seated religious feelings. Surely with such a country and peopled from such a stock there is no height of future greatness to which South Africa may not reasonably aspire.

All the South African countries have been flourishing for three or four years past. The Cape Colony in 1883 exported £2,742,470 worth of diamonds; in 1884, £2,807,329; in 1885, £2,492,753; in 1886, £3,504,756, and in 1887, £4,035,582. In point of quality they may not command quite the value of Brazilian and Indian, but the consumption is so large that it has prevented much of a depreciation.

There are a number of properties being developed in the Transvaal gold fields, the majority of which are only being worked on a very small scale. The production of gold is thus far inconsiderable, but is bound to increase largely, for not only are many companies doing good developing work and opening up their mines for a steady output, but they are taking steps to facilitate the transport of their ore to the mills, and it appears certain that when true mining is once commenced the gold production from the comparatively limited area will show a large monthly increase, and it is estimated that it will eventually not fall short of 50,000 ounces per month. A wild speculation has been going on in London in Witwatersrand gold-mining shares. These shares were driven to fancy prices, and a panic occurred in them last spring, when the shares of 20 companies declined in a week £8,600,000. The April Witwatersrand gold output was 27,136 ounces. The exports of South African, chiefly Transvaal, gold from January 1, 1871, to January 1, 1888, aggregated £877,568; during the 16 months from January 1, 1888, to May 1, 1889, they reached £1,329,383, furnishing about the most conclusive proof procurable that gold production is rapidly on the increase in the locality.

Copper production in the Cape Colony has fluctuated during late years between 6000 tons fine and 8000 tons; that of wool has ranged between 35,000,000 pounds and 50,000,000 pounds; that of mohair exceeds 5,000,000 pounds per annum. The export of ostrich feathers rose in ten years from 2287 pounds to 28,768 pounds, and 15 years later it was 251,084 pounds. Natal produces 60,000 tons of sugar annually.

Our domestic export to British South Africa has latterly been on the increase,

whereas our import thence has fallen off somewhat, as the figures at foot show:

Calendar year.	Import into the United States.	Domestic export to South Africa.
1888.....	\$969,715	\$1,926,804
1887.....	1,258,394	1,498,412

The import of Cape wool during the fiscal year 1888 into New York, Boston and Philadelphia did not exceed 1,395,736 pounds.

The convicts in the New York State prisons are once more being put to work. The temporary suspension of work under the Yates law was disastrous from the start, the convicts and the tax-payer alike suffering, while the laboring interest, in whose behalf the experiment was made, derived no appreciable advantage. The new law just taking effect restores the *status quo* in a large measure. In Auburn prison 100 men will work on stoves and iron hollow-ware, 175 on plumbers' iron supplies and brass castings and 150 in the manufacture of machinery. By far the larger proportion are assigned to the manufacture of wearing apparel of various descriptions, in competition with women rather than able-bodied laborers. Any bidder for prison labor under contract may furnish his own machinery if so disposed, or it may be supplied by the State.

#### Notes on Naval Affairs.

Secretary Tracy will issue in a few days proposals for the purchase of 661 tons of steel plates for use in the battle-ship Texas, now being constructed at the Navy Yard, Norfolk. These bids will be opened at the Navy Department on September 4. The specifications provide that 246 (long) tons of these plates are intended for use in the lower layer of protective-deck plating and the remaining 415 tons are for the lower and middle layers of protective-deck plating and for the upper and lower layers of tops of redoubt and protective side plating. The delivery of these steel plates is to be commenced within 30 days after the contract is signed and completed within 60 days.

When it was decided to build the Texas at Norfolk that navy-yard was entirely without the necessary facilities for iron ship-building. During last year the plant was designed, and it will ultimately provide the yard with first-class facilities for this character of work. A shop has been built to include ample space for the punches, shears, planers and other heavy machines and motive machinery. The angle, bar and plate furnaces have been completed. Tanks for pickling the outer plates, convenient cranes for handling the plates and rapid brushing machinery are now complete. The beam forge shed has been fitted with overhead circular cranes and a hoist has been put in place for handling beams at the forges. There has also been erected a circular rack for storing plates, with derrick and steam-hoist in the center. It is expected by the Navy Department officials that the plant at the Norfolk yard when completed will be next to that now at the New York yard, which is pronounced to be one of the finest in the country.

Bids were opened at the Navy Department on the 8th inst. for 428 tons of steel plates for the belted-cruiser Maine, now building at the Navy Yard, New York. There were only two bids received—from the Linden Steel Works and Carnegie, Phipps & Co., of Pittsburgh. The bid of the Linden company, \$34,193.60, was the lower and the contract will be awarded to them. The bid of Carnegie, Phipps & Co. was \$36,294.



At the new ordnance shop at the Washington Navy Yard gangs of workmen are busy getting tools in place and putting up boilers and machinery, and steel for guns is beginning to arrive. It is thought that the employees at the new shop will number full 1000 by the end of the fiscal year. The necessary tools and machinery for the making of 16-inch guns for the heavy armor-plated monitors and defense vessels are being prepared.

## OBITUARY.

DR. JOHN PERCY.

Dr. John Percy, whose treatise on metallurgy gave him a world-wide reputation, died at his home in Bayswater, England, on the 19th of June. He was born in 1817, his father being a Nottingham solicitor. Placed at an early age in the medical school of the University of Edinburgh, he took his degree of M. D. at the age of 21. Dr. Percy also studied in the medical schools of Paris, and while in France undertook a botanical tour in the Pyrenees. He established himself in practice in Birmingham, where he became physician to the Queen's Hospital. His residence in Birmingham led him to take much interest in the chemical principles involved in metallurgical operations; and when the Government School of Mines was established in 1851, De la Beche selected Percy for the post of lecturer on metallurgy, a position which he held for 28 years. Abandoning the practice of medicine, he settled in London and devoted himself to scientific research, taking special interest in the early development of photography. His great object, however, seems to have been the production of an exhaustive treatise on metallurgy, and after years spent in the accumulation of material, his first volume was given to the world in 1861. This dealt mainly with the subjects of fuel, copper and zinc. It was followed in 1864 by a voluminous treatise on iron and steel, and in due course other volumes appeared, dealing more or less completely with lead, silver and gold. But this great work—the worthy object of an active life—says the London *Ironmonger*, was destined to remain incomplete, and after his retirement from the Royal School of Mines in 1879 its completion became practically impossible. So widely, however, was its value recognized that the successive volumes as they appeared were translated into both French and German. In 1877 the Iron and Steel Institute recognized Dr. Percy's services to metallurgy by the award of the Bessemer medal; and only shortly before his death he held the presidency of this institute and, notwithstanding his failing health discharged the duties of the chair with characteristic ability. Up to the time of his death he was superintendent of ventilation in the Houses of Parliament. Dr. Percy was a man of great force of character and versatility of tastes, a writer in command of a vigorous and pure style of English, a lecturer of power and popularity, and a teacher deeply respected by his students. For more than a quarter of a century Dr. Percy practically directed all the metallurgical teaching in England, and nearly every English assayer of scientific reputation had passed through his laboratory.

WILLIAM M. LYON.

William M. Lyon, a former well-known iron manufacturer of Pittsburgh, died at his residence at the Monongahela House, in that city, on the morning of the 3d inst. Mr. Lyon was born in Harrisburg April 29, 1809. His father, John Lyon, was one of the pioneer iron manufacturers in Pennsylvania, and was a contemporary of Peter Shoenberger, the famous manufacturer of iron in the Juniata Valley. The father of the deceased estab-

lished the Tyrone, Pa., forges in 1811. In 1825 he removed to Pittsburgh and established the first manufactory in that district, the firm being Lyon, Shorb & Co. In 1831 William M. Lyon went to Pittsburgh and entered into the office of the firm, and at his father's death took an active part in the management of the plant. He was one of the original promoters of the Pittsburgh and Lake Erie Railroad Company, and his advice about the rights of way enabled that road to overcome many difficulties encountered in its construction.

FERNANDO WOOD, JR.

Fernando Wood, Jr., a grandson of ex-Mayor Fernando Wood, of New York, was drowned near Greytown, Nicaragua, on June 12. No particulars of the accident to hand. Mr. Wood was a civil engineer in the employ of the Nicaragua Canal Company, and only left New York on May 25.

JOHN NORQUAY.

John Norquay, for nearly 20 years Premier of Manitoba, and one of the best-known men in the Canadian Northwest, died suddenly at Winnipeg on the 4th inst., of heart disease, at the age of 48.

JOHN P. VERREE.

Ex-Congressman John P. Verree died on June 27, at his residence at Verree's Mills, in Philadelphia, where he was born in 1817 and where he had lived all his life. He engaged in the iron business at an early day, being for years the principal partner in the firms of John P. Verree & Co., manufacturers of edge-tools, and Verree & Mitchell, manufacturers of iron and steel. He was twice elected to Congress, representing his district in the Thirty-sixth and Thirty-seventh Congresses, from 1858 to 1862. Mr. Verree was never married.

CHARLES PARKIN, JR.

Charles Parkin, Jr., son of Charles Parkin, Sr., of Miller, Metcalf & Parkin, proprietors of the Crescent Steel Works, of Pittsburgh, died at his residence in that city on the 3d inst. The deceased was pursuing a course of studies at Lafayette College, where he received the injuries which developed into heart disease and caused his death.

WILLIAM G. WATSON.

William G. Watson, ex-mayor of Paterson, N. J., and the founder of the Watson Mfg. Company, died 7th inst. at Morrow's Mills, aged 70 years. He was the builder of the iron bridge at Rosendale and many similar structures.

## London Workmen at the Paris Exposition.

From the London *Times* we take the following: "The joint committee of workmen and employers invited by the Lord Mayor to assist him in administering the small fund recently raised for the purpose of sending artisan reporters representing the various London trades to the Paris Exhibition have now finally selected the workmen to be sent. The trades represented, each of which sends one man, unless where otherwise denoted, are as follows: Bakers, cooks and confectioners, barometer and thermometer makers, boiler-makers, boot and shoe makers (3), bookbinders, brass-workers, bricklayers, bronze-workers, brush-makers, buhl-cutters, carpenters and joiners (2), cabinet-makers (2), carvers in stone and wood (2), carvers and gilders, chair-makers, clock-makers, coach and carriage builders (2), decorators, diamond-cutters, engineers (4), engravers and die-sinkers (2), fancy leather-workers, farriers, gas-fitters, glass-blowers, glass-painters, goldsmiths and jewelers (2), hat-

ters, iron-founders, lamp-makers, letterpress printers, lithographic artists, lithographic printers, locksmiths, marble masons, musical-instrument makers (2), ordnance (2), paper stainers, plasterers, plumbers, portmanteau-makers, potters, process-block makers, railway servants, small arms (Enfield), harness-makers, safe-makers, school-appliance makers, weavers, silver-plate workers, stationers, stereotypers, stone-masons, tailors, tanners, tile and mosaic workers, tin-plate workers, turners, type founders, upholsterers, watchmakers, wrought-iron workers and zinc-workers—76 in all. The expense of a fortnight's visit, with an honorarium on the sending in of his report, will be £10 per man. The men will go in three batches of 25 each."

## PERSONAL.

S. S. Babbitt, for a number of years superintendent of the machine-shops of James Rees, at Pittsburgh, severed his relations with that firm on the 1st inst., and is now connected with the Robinson-Rea Mfg. Company, builders of rolling-mill machinery, of that city.

W. L. Pierce, secretary of the Lidgerwood Mfg. Company and general manager of their principal office, 96 Liberty street, this city, sailed for Europe Saturday, July 6, to be absent about two months. Mr. Pierce will combine business with pleasure during his stay abroad, and will visit the Paris Exposition before his return.

W. S. Douglass, for several years superintendent of the machine-shops of William Tod & Co., at Youngstown, Ohio, has been appointed general superintendent, the appointment dating from the 24th ult.

C. H. Andrews, the well-known iron manufacturer of Youngstown, Ohio, accompanied by his wife and daughter, sailed for Europe on Thursday, the 4th inst., for a six-months' pleasure trip.

The Secretary of the Treasury has appointed John C. Kafer to be inspector of boilers of steam vessels at this port, vice Edward Morsland, removed.

Henry R. Hague, of New York, the patentee of an improved forge, which has been selling largely through the Northwest, was the victim of a highway robbery near Minneapolis on the 4th inst. to the extent of \$20,000 in drafts, and, besides, was disfigured with vitriol.

It is announced that President Thurston, of the Bethlehem Iron Company, is about to remove his residence to Cuba. Vice-President Robert P. Liuderman will act as president.

W. H. Paine, consulting engineer of the Brooklyn Bridge, has resigned, desiring to leave the newly-appointed Board of Trustees untrammelled in their management. At the same time he calls attention to the fact that he is the inventor of the grip now in use on the cars and requests such settlement as may be right and proper. President Howell stated that the matter would at once be referred to a committee and proper compensation awarded.

H. W. Oliver, Jr., of the well-known firm of Oliver Bros. & Phillips, who was recently elected president of the Pittsburgh and Western Railroad, is giving that corporation a good deal of attention, and its last monthly statement shows that it is doing a good business. The Western takes to Pittsburgh a great deal of Lake ore and gets its share of pig-iron traffic from the Shenango and Mahoning valleys. John W. Chalfant, of Spang, Chalfant & Co., is a large stockholder in the same road.

# TRADE REPORT.

## Chicago.

Office of *The Iron Age*, 59 Dearborn street, (CHICAGO, July 8, 1889.)

**Pig-Iron.**—The first week in July opened up very much as did the first week of last month. During the intervening period the market has undergone a marked change, which promises to be well maintained. The downward course in the price of all Iron has reacted in favor of the seller. Charcoal Iron is now the most in demand, whereas Coke Iron was the favorite brand last month. Those who bought Charcoal Iron early in the week obtained advantages which could not be had at the close. Sellers are cutting down the period of deliveries and gradually raising their prices. It is a favored customer who can buy Iron now at 50¢ per ton above early June prices. The asking price has been advanced \$1 per ton and the buyer who has no claim of "protection" upon the seller cannot get much of a concession from prices asked. Small lots and short deliveries are preferred by nearly all, if not all, Charcoal-makers. Coke-Iron furnaces are well sold ahead, and large contracts are not desired. The Chicago Furnace Company sold a block of 12,000 tons of Bessemer Pig last week. This was an unexpected occurrence, as it was generally supposed that the consolidation gave the Steel-Rail companies sufficient furnace capacity to meet their requirements. This sale is the first made this year in sufficient quantity to establish the market value here, and warrants our quoting cash, f.o.b. Chicago, as follows: Bessemer, \$16.50; Lake Superior Charcoal, all numbers, \$18.50 @ \$19; Local Coke, No. 1, \$16; No. 2, \$15; No. 3, \$14; Chicago and Bay View Scotch, \$15.50 @ \$16; American Scotch (Blackband), \$17.50. Southern Irons are not being marketed to any extent. Makers are continually notifying sale-agents of advances that make it impossible to take orders for Foundry Irons. Their latest changes make the price of No. 1 Foundry \$16.50; No. 2, \$15.50; No. 3, \$15; No. 1 Soft, \$15.50; No. 2, \$14.75; Gray Forge, \$14.50; Mottled, \$13.50 @ \$14; Tennessee Charcoal, No. 1, \$17.75; Alabama Car-Wheel, \$24 @ \$25; Ohio Irons, Hanging Rock, No. 1, \$18; Jackson County, No. 1, \$17.50, prompt shipment, small lots.

**Bar-Iron.**—Merchants are now realizing in a practical way that manufacturers mean to get higher prices. Several good firms had their orders refused by makers at \$1.50, mill, including half extras. Last month that price would have been satisfactory to any of the producers of Common Bars. Some mills are closed for repairs, others say they are full of orders for the present, thus temporarily curtailing the supply and giving those in operation an excellent opportunity to be independent. If consumption continues to increase this month, and mills are not too anxious to load up six months' work ahead, there is a fair chance that this improvement will be sustained and bettered. Manufacturers' prices, f.o.b. Chicago, range from \$1.60 to \$1.65, half extras, on Common Bars; on Single Refined, \$1.75 @ \$1.80; on Best Refined, \$1.85 @ \$1.90. From store jobbers quote Common at \$1.70 @ \$1.75; Single Refined, \$1.85; Best Refined, \$1.90 @ \$1.95.

**Structural Iron.**—The demand for Beams has improved very rapidly, and the large stocks that were lying around for months that nobody wanted are about exhausted. The Illinois Steel Company start their North Chicago mill on Beams this week. It is said other makers are

also short of stock and have difficulty in filling orders as wanted. Foundries are filling up on Cast Shapes, and as they do are getting nearer to a profitable basis. Additional new and unexpected building projects are maturing. Quotations are as follows, f.o.b. Chicago: Angles, 2.10¢ @ 2.12½¢; Universal Plates, 2.15¢; Sheared Plates, 2.20¢; Tees, 2.55¢; Beams and Channels, 2.90¢. From store Angles are quoted at \$2.20 @ 2.30¢; Tees, 2.65¢ @ 2.70¢; Beams, 3.40¢.

**Plates, Tubes, &c.**—There are no changes in the conditions of this market. Small-lot trade is fairly active from store. Mills are not soliciting orders, but are full of work on Flange and Shell Steel and light Iron Plates. Prices are firm as follows, from store: Nos. 10 to 14 Iron Sheets, 2.60¢ @ 2.70¢; Nos. 10 to 14 Steel Sheets, 2.75¢ @ 3¢; Tank Iron, 2.40¢ @ 2.50¢; Tank Steel, 2.50¢ @ 2.60¢; Shell Iron or Steel, 3¢; Flange Iron, 4¢; Flange Steel, 3.50¢; Fire-Box Steel, 4.75¢ @ 5.50¢; Ulster Iron, 3.75¢; Boiler Rivets, 3.75¢ @ 4.25¢; Boiler Tubes, 55 % off for 1½-inch and less and 60 % off for 2-inch and larger.

**Sheet-Iron.**—There is a notable increase in demand for Light Sheets from country trade. Manufacturers are not seeking orders for present or future delivery, and are firm in their prices. They quote on a basis of 3¢ for No. 27, f.o.b. Chicago, on small lots, and it is doubtful whether buyers can obtain concessions from these figures. From store jobbers quote No. 24 at \$3.10; Nos. 25 and 26 at \$3.20, and No. 27 at \$3.30.

**Galvanized Iron.**—In the best quality Iron business has been very good in small lots. Prices have been steady in comparison with the demoralized condition of the market on low-grade Iron. There are brands of Juniata Iron that can be had at prices which scarcely cover the cost of Black Sheets. Manufacturers' quotations, f.o.b. Chicago, on this grade of Iron range from 67½ % and 5 % to 70 % discount. In small lots from store Juniata is quoted at 65 % off, and Charcoal at 65 % and 5 % off.

**Merchant Steel.**—There is a steady trade in small lots for the general line of Steels. The demand for Tool-Steel has been improving and the first week in July opened up very nicely. Soft-Steel Bars are in good request. On the whole line prices appear to be quite firm from store at the following quotations: Mixed-Machinery Steel, \$2.10 @ \$2.30; Tool Steel, \$7.75 @ \$8.50; Specials, 12¢ @ 25¢; Crucible - Spring Steel, \$3.50 @ \$3.60; Open-Hearth Spring, \$2.50; Open-Hearth Machinery, \$2.50 @ \$3; Bessemer Machinery, \$2.30 @ \$2.40; Sheet Steel, 7¢ @ 10¢; Tire Steel, \$2.20 @ \$2.25. Manufacturers continue to quote, f.o.b. Chicago, in round lots: Open-Hearth-Machinery Steel, 2.10¢; Tire Steel, \$2.15; Toe-Calk, 2.20¢; Spring Steel, \$2.25; Soft-Steel Bars, \$1.90; Open-Hearth Plow Stock, 2.50¢; Crucible Plow Stock, \$3.50.

**Steel Rails.**—In a small way the demand continues to be very brisk, the orders being largely for immediate shipments. The mills in this vicinity are full of work and buyers of these small lots are required to pay outside prices. For immediate delivery Heavy Sections are quoted at \$30 and \$29.50 for September and later; 30-lb Rails are quoted at \$33, and when the time of delivery is absolutely July or August mills are asking \$34; 12-lb @ 20-lb Rails are quoted at \$1.75 @ \$1.80 per 100 lb.

**Track Supplies.**—The demand is for small lots only and very light. There appears to be no change in prices, which are as follows: Splice-Bars, 1.55¢ @ 1.60¢; Bolts with Square Nuts, 2.50¢ @ 2.55¢; Hexagon Nuts, 2.60 @ 2.70¢; Spikes,

1.85¢ @ 1.90¢; Hot-Pressed Square Nuts, 5.85¢ discount; Hexagon Nuts, 6.35¢ discount.

**Old Rails and Wheels.**—If consumers could get Old Rails at their price transactions would be very numerous. As it is, sales are limited to small lots, and made only in cases where buyers' requirements compel them to meet the price of the seller. Speculators have offered \$21.50 for lots of 500 to 1000 tons. Several small lots were sold to consumers at this figure. The amount of Rails offering is very limited, and the asking price is about \$22.50. The demand for Old Steel Rails is a little better. The price continues to be about \$16.50 @ \$17.50 for long lengths, and \$14.50 for short pieces. Old Car Wheels are in fair request; buyers offering \$17.50 on lots ranging from 100 to 300 tons. Sellers are not disposed to accept less than \$18.50, and several sales are reported at distant points equivalent to \$18.25, Chicago.

**Scrap-Iron.**—Lately Eastern mills have been making inquiry in this market for Forge and Mill Scrap. The latter grade is scarce and firm. Dealers have on hand 6000 to 8000 tons Forge Iron, which they are holding at higher figures than consumers are willing to pay. Dealers quote as follows per ton of 2000 lb: No. 1 Wrought, \$18; No. 1 Mill, \$14; No. 2 Mill, \$8; Horseshoes, \$17.50; Car-Axles, \$21.50; Wrought Turnings, \$11; Cast Machinery, \$11.50; Stove Plate, \$8.50; Cast Borings, \$8; Leaf Steel, \$15; Coil Steel, \$14; Locomotive Tires and Track Scrap, \$16; Mixed Country Wrought, \$12 @ \$13.

**Hardware.**—The heavy trade of the past two months continues unabated. The occurring of Independence Day last week gave jobbers a chance to clean up back orders. There will probably be a little falling off now on account of the hot weather and summer vacations. The heaviest portion of the demand is for Builders' Hardware, Mechanics' Tools, Haying Tools, Grain Cradles and Household Utensils. Country merchants are also beginning to place their orders for fall and winter goods, and the advice accompanying their orders gives jobbers a very hopeful view of the fall trade. The wheat crop prospects are excellent throughout the West, and corn promises to be an abundant yield. The new schedule of freight rates which goes into effect this week will help Chicago jobbers. For some time past the New York houses have been able to deliver goods in the Northwest at a less rate than they could be shipped from Chicago. Through the arbitrary action of one or two Western roads this unjust discrimination is about to be broken up, and jobbers and manufacturers in this vicinity anticipate considerable improvement in trade on lines of goods that have come in competition with the Eastern sellers.

**Nails.**—From the manufacturers' side the market is gradually improving. Prices are considerably firmer, with less disposition on the part of makers to see who can sell the lowest. Quite a number of the heavy retailers in the West have taken advantage of the low freight rates and bought their Nails in carload lots from the manufacturers at about the same price that jobbers have had to pay for large lots. To these sales there was little objection. Within the past week it became known that one or two of the manufacturers were selling to the small retailers in the country in less than carload lots at figures which do not permit the jobber to dispose of his stock at a profit, notwithstanding the fact that the greater portion of the Nails jobbers now offer were purchased at exceedingly low rates. Jobbers are very much chagrined over this matter, and from the



mutterings that are occasionally heard, it is probable that the parties who are selling Nails in this way will not meet with a very favorable reception from the jobbers hereafter. None of the manufacturers appear anxious to take large orders at the present time, but those who answer the jobbers' inquiries quote about \$1.75 @ \$1.80 rates, regular terms, f.o.b. Chicago. Jobbers continue their quotations on mixed lots at \$1.85 rates for Cut Nails, and \$2.30 for Wire Nails. Small lots are quoted at \$1.90 for Cut Nails, and \$2.30 for Wire Nails.

**Barb-Wire.**—There is still less demand for Barb-Wire this week, and the chances are that the trade is about over for the summer. Jobbers continue their quotations at \$2.75 for Painted Wire, and \$3.35 for Galvanized from store. Manufacturers are beginning to accumulate a little stock and will probably keep their mills pretty actively engaged until the fall demand begins.

**Pig-Lead.**—There was a much stronger market last week. About 13,000 tons, principally for future delivery, changed hands at \$3.90 @ \$3.95. Desilverized is held stronger by most refiners, although some sales are reported at \$3.90. Indications are that the market will continue active at about the figures named. It is estimated that there is about 13,000 tons of stock available; much of it however, is held for higher prices.

## Philadelphia.

Office of *The Iron Age*, 230 South Fourth St., PHILADELPHIA, Pa., July 9, 1889.

**Pig-Iron.**—The market has been somewhat quieter during the past ten days, but prices have been hardening all the time, and are generally higher than they were at the close of the month. The offerings are unusually light, so that any one requiring Pig-Iron has not much choice of brand, unless he is willing to pay for it. Still, there is no disposition to force an advance, but as the leading producers are well sold up, they naturally require satisfactory rates on additional orders. At the moment there is an appearance of hesitancy on both sides. Consumers are fairly well covered for the next 60 days, and as producers are in an equally good position, there is no absolute necessity for doing business until they can form a better idea of the market than can be done today. The firmness, therefore, seems to be fully warranted, and every one feels that present prices are safe, although some of the belated ones are averse to paying over \$15, \$16 and \$17 for good brands, while sellers ask 25¢ @ 50¢ more, and in some instances still higher figures are required. This, in connection with a very general suspension of work since the beginning of the month, has developed some degree of hesitancy, and, to use a common expression, they are "waiting to see which way the cat jumps." Sales in most cases have been at prices varying from \$15 to \$15.50 delivered for Gray Forge, \$16 to \$16.50 for No. 2, and \$17 to \$18 for No. 1. Southern Irons are offered sparingly at \$15, \$16 and \$17, delivered in consumers' yards, but there is very little doing and no pressure on the part of sellers.

**Blooms.**—Sellers are scarce, and offers of large lots can hardly be obtained at present, particularly from Western mills. In the absence of sales we quote former figures, although it is doubtful if orders could be placed except at more or less of an advance. Latest figures were about as follows: \$28.50 @ \$29, delivered, for Nail Slabs; \$30 @ \$31 for Tank Slabs; \$32.50 @ \$33.50 for Shell Slabs; \$36 @ \$37 for Flange, and \$38 @ \$40 for Fire-Box; Charcoal Blooms, \$52 @ \$54; Run-out Anthracite, \$41 @ \$42.50; Scrap Blooms, \$32 @ \$33. "Bloom" ton of 2464 lb

**Muck-Bars.**—The demand has been quite active, with sales at all sorts of prices, ranging from \$28 up to \$28.75, delivered. There is less urgency on the part of buyers at the moment, but the offerings are light and prices firm at from \$28.50 to \$28.75, delivered, or \$27.50 @ \$28 at mill.

**Bar-Iron.**—The demand is not as heavy as might be expected, considering the activity in other departments. There is improvement, of course, and an advance varying all the way from  $\frac{1}{2}$ ¢ to 1¢, but the amount of business taken is not large, nor is there anything in sight that promises to make a much better showing in the near future. The trade are somewhat hopeful, nevertheless, and there is at least a fair probability of improvement, providing there is no general setback to things. A renewal of demand for Skelp-Iron would be very helpful, and that is said to be well assured within the next 30 days. Meanwhile prices for Bars range from \$1.77½ to \$1.85, according to make, &c.; Grooved Skelp, \$1.75 @ \$1.80, and Sheared, \$1.95 @ \$2.

**Plates.**—The mills are all full of work, and are therefore not looking for new business. There are a good many orders around, but the difficulty is to find some one in a position to accept them. Prices under these conditions are firm and irregular, according to the necessity of the buyer. It is not easy to determine whether this state of affairs is due to a general revival in business and preliminary to a further advance in prices, or whether it comes from the unexpected demand to repair damages arising from the floods in various parts of the State. On the whole, the chances seem favorable for permanent improvement, although it may have its inception in the sudden demand for repairs, renewals, &c. Prices are difficult to quote with exactness, but in a general way the following are about the usual rates: 2¢ @ 2.2¢ for Ordinary Plates and Tank Plates; 2.10¢ @ 2.25¢ for Universal Plates; Shell, 2.4¢ @ 2.5¢; Flange, 3.25¢; Fire-Box, 3.7¢ @ 4¢; Steel Plates, Tank and Ship Plate, 2.2¢ @ 2.30¢; Shell, 2.5¢ @ 2.7¢; Flange, 2½¢ @ 3¢; Fire-Box, 3½¢ @ 4¢.

**Structural Material.**—The demand from bridge-builders and others is very urgent, and manufacturers find it difficult to meet deliveries as promptly as desired. There is still a great deal of inquiry from various sources, but because of the crowded condition of the mills a large proportion of the orders are held in abeyance. Prices firm at about the following figures, delivered, say: Bridge Plate, 2.10¢ @ 2.15¢; Angles, 2.10¢ @ 2.20¢; Tees, 2.6¢ @ 2.7¢; Beams and Channels, 2.8¢ for Iron or Steel.

**Sheet-Iron.**—Manufacturers report an active demand for all their specialties, while the number and character of the inquiries promise well for the fall months. Prices are firm, some of the previously low sellers asking an advance, but for standard qualities quotations are about as follows:

Best Refined, Nos. 14 to 20.....	3¢
Best Refined, Nos. 21 to 24.....	3.20¢
Best Refined, Nos. 25 to 26.....	3.40¢
Best Refined, No. 27.....	3.50¢
Best Refined, No. 28.....	3.60¢
Common, $\frac{1}{4}$ ¢ less than the above.	
Best Soft Steel, Nos. 14 to 20.....	3½¢
Best Soft Steel, Nos. 21 to 24.....	3¾¢
Best Soft Steel, Nos. 25 to 26.....	3¾¢
Best Soft Steel, No. 27.....	4¢
Best Bloom Sheets, $\frac{1}{4}$ ¢ extra over the above prices.	
Best Bloom, Galvanized, discount.....	.65 %
Common, discount.....	.67½ %

**Steel Rails.**—The market is very firm, with indications of an upward movement in the near future. The asking prices are \$28.50, at mill, but sales have been made at \$28, which, however, is a very inside figure. The demand for Blooms and Bil-

lets is large and increasing, rendering manufacturers comparatively indifferent in regard to the Rail trade unless at satisfactory prices. The feeling is more confident than we have noticed for a long time past, and the conditions seem to warrant it.

**Old Rails.**—There is nothing doing at the sea-board. Buyers bid \$22.50, with sellers at \$23 for prompt shipment. Sales in the interior at about \$23 @ \$23.50, delivered to consumers.

**Scrap Iron.**—Scarce and in good demand. Sales at about the following quotations: \$20.50 @ \$21 bid, \$21.25 asked, for cargo lots; \$21 @ \$21.50 for carload lots, delivered, or for choice, \$22; No. 2 do., \$14 @ \$15; Turnings, \$14 @ \$15; Old Steel Rails, \$16.50 @ \$17.50; Cast Scrap, \$15 @ \$16; do. Borings, \$9 @ \$10; Old Fish-Plates, \$23 @ \$24; Old Car-Wheels, nominal, \$17 @ \$18, Philadelphia.

**Nails.**—The feeling is gradually becoming firmer, although the demand has been a little slow, owing to the holidays. Carload lots of standard make command \$1.85 @ \$1.90 and lots from store about \$2.

**Wrought-Iron Pipe.**—There is an excellent demand for everything and prices are steady, with discounts unchanged, as follows: Butt-Welded Black, 52½%; Lap-Welded Black, 65%; Butt-Welded Galvanized, 45%; Lap-Welded Galvanized, 52½%; Boiler Tubes, 60%.

## Pittsburgh.

Office of *The Iron Age*, 77 Fourth Ave., PITTSBURGH, July 9, 1889.

Some of the Iron-mills have signed the scale and resumed, and others will doubtless do the same as soon as they have made necessary repairs and completed stock-taking. But very few of the Steel mills have signed the wage-scale as yet; they are holding back to see what the result will be at Homestead. If Carnegie, Phipps & Co. succeed in getting their mill started up on the basis proposed it is probable the other Steel mills will also ask for a lower wage-scale. Notwithstanding the long-continued rains throughout different parts of the country, good crops are assured, and the feeling in regard to general business is hopeful in consequence.

**Pig-Iron.**—There has been no important change in the situation during the past week. Business, while not so particularly active, is all that can be expected at the present time. Quite a number of mills have shut down for stock-taking or repairs, hence the demand for present delivery is only fair, but consumers would nearly all be very glad to make contracts for future delivery at present prices. Sales have been made for August at 25¢ @ 30¢ per ton above present prices and some furnace men want still more. This indicates a belief that better prices are at hand. Nearly all our city furnaces have sold about all the Iron they care to sell for the present. Some of them are pretty well sold ahead and the latest and most reliable advices from the Shenango and Mahoning valleys are of a similar character. There is a disposition in some directions to boom the market, but it does not appear to receive much encouragement. We quote as follows:

No. 1 Gray Forge.....	\$14.00 @ \$14.15	cash
No. 2 Gray Forge.....	13.75 @ 13.85,	"
All-ore Mill.....	14.50 @ 15.00,	"
White and Mottled.....	13.00 @ 13.50,	"
No. 1 Foundry.....	16.00 @ 16.25,	"
No. 2 Foundry.....	15.00 @ 15.25,	"
Charcoal Foundry.....	21.00 @ 23.00,	"
Cold Blast Charcoal.....	25.00 @ 28.00,	"
Bessemer Iron.....	16.00 @ 16.25,	"

Included in the sales reported were 500 tons No. 1 Gray Forge for August delivery at \$14.30, cash. Bessemer Iron is being offered for July and August at

\$16.25 @ \$16.50, cash, but buyers are reported very scarce at anything over \$16, cash.

**Spiegel**—Is quoted at \$30  $\frac{1}{2}$  ton for 20  $\frac{1}{2}$ , and Ferromanganese at \$60 for 80  $\frac{1}{2}$ .

**Muck-Bar**.—There is some inquiry and the market is firmer. We are advised of sales at \$26.50, cash, for July, and \$27, cash, for August. The prices quoted show an advance of from 50¢ to \$1  $\frac{1}{2}$  ton as compared with the lowest point.

**Manufactured Iron**.—There is a continued fair demand, and while prices remain unchanged, there is a firmer feeling in sympathy with the raw article, while orders are being booked for immediate or nearby delivery at current rates. Contracts cannot be made for future delivery excepting at an advance. Manufacturers will book orders with the understanding that they get market rates at time of delivery, whatever they may be, and this is certainly fair enough. The output at present is not large, as a number of mills are stopped, making repairs, and the indications point to a considerably improved demand as the season becomes more advanced.

**Nails**.—There has been some inquiry developed for Cut Nails during the past week, and with a light production and stocks very much reduced, a firmer feeling has been developed, and the feeling obtains that higher prices are near at hand. The product of two factories out in the valley has already been contracted for, and it is probable other contracts of a similar character will be made. Prices are still quoted upon a basis of \$1.85 @ \$1.90, 60 days, 2  $\frac{1}{2}$  off for cash, for 12d. to 40d. Wire Nails are quoted at \$2.25.

**Wrought-Iron Pipe**.—The Pipe-mills continue busy, having all they can do, and prices are firm at the association rates. Discounts on Black Butt-Welded Pipe, 52  $\frac{1}{2}$   $\frac{1}{2}$ ; on Galvanized do., 45  $\frac{1}{2}$ ; on Black Lap-Welded, 65  $\frac{1}{2}$ ; on Galvanized do., 52  $\frac{1}{2}$   $\frac{1}{2}$  Casing, 5  $\frac{1}{2}$  inches, 62  $\frac{1}{2}$   $\frac{1}{2}$  off; other sizes, 60  $\frac{1}{2}$  off; Boiler Tubes, 1  $\frac{1}{2}$  inches and smaller, 55  $\frac{1}{2}$ ; 2 inches and larger, 60  $\frac{1}{2}$ ; 2-inch Tubing, 13¢  $\frac{1}{2}$  foot, net; Line-Pipe, 2-inch, 10  $\frac{1}{2}$ ¢  $\frac{1}{2}$  foot net; 2  $\frac{1}{2}$ -inch, 16¢; 3-inch, 21¢; 3  $\frac{1}{2}$ -inch, 25¢; 4-inch, 30¢; 4  $\frac{1}{2}$ -inch, 36¢; 5-inch, 42¢; 6-inch, 58¢; 7-inch, 70¢; 8-inch, 95¢; 9-inch, \$1.20; 10-inch, \$1.25; 12-inch, \$1.60. The July meeting of the association takes place at the Oriental Hotel, Manhattan Beach, on the 17th inst.

**Old Rails**.—The market in Old Iron Rails continues firm, and while the demand is not so pressing, the supply is light and prices are tending upward; may be quoted at \$21.50 @ \$23, with a sale of 500 tons reported at \$22.75, and Steel Rails are still quoted at \$16.75 @ \$17 for short and \$19 @ \$20 for long lengths.

**Steel Rails**.—Are still quoted at \$28 @ \$29, cash, at mill, according to character of order, delivery, &c. As stated in our last report, both of the mills here are well supplied with orders, and are pretty independent in consequence, and this appears to be the status of all the mills in the country. It is evident that buyers who have placed contracts have done better than those who have yet to buy, and while no extravagant prices are expected, it is about as certain as anything can be that they will not be any lower, and while prices quoted show an advance of \$2 @ \$3  $\frac{1}{2}$  ton as compared with the lowest point, they are still low enough.

**Billets, Blooms, &c.**—There is an increased demand for Bessemer-Steel Billets and Blooms, which we now quote at \$27 @ \$27.50, with sales of some 4500 tons reported at \$27.40. Bessemer-Steel Nail Slabs are also stiffer—quoted at \$26.75 @ \$27.

**Railway-Track Supplies**.—Spikes are still quoted at 1.95¢, 30 days, free on cars at works; Splice Bars, 1.65¢ @ 1.75¢; Track Bolts, 2.75¢ with Square and 2.85¢ with Hexagon Nuts.

**Old Material**.—No. 1 Wrought Scrap is quoted at \$18 @ \$18.50, net ton; No. 1 Wrought Turnings, \$13 @ \$13.50; Old Car-Axles, \$23 @ \$24; Cast Scrap, \$13.75 @ \$14, gross; Cast Borings, \$11 @ \$12; Old Car-Wheels, \$18; Rail Crops, \$18; Mixed Scrap Steel, \$16.75 @ \$17.

## Louisville.

LOUISVILLE, KY., July 8, 1889.

**Pig-Iron**.—The market continues firm, and sales have been made at an advance of \$1.25  $\frac{1}{2}$  ton over the extremely low prices which prevailed about the middle of June. The demand for Gray Forge and No. 3 Foundry, especially, is active, and these grades for immediate delivery are scarce. Full prices are being asked for all grades of Iron, and where concessions are asked, same are not granted. Gray Forge is selling freely, basis \$13; No. 3 Foundry, \$13.50, and some furnaces are asking more money for special brands. Car-Wheel Irons are also in greater demand, and Car companies are reported to be full of work for some months to come. We quote as follows:

Southern Coke, No. 1 Foundry.	\$14.50 @	\$15.00
Southern Coke, No. 2 Foundry.	14.00 @	14.50
Southern Coke, No. 3 Foundry.	13.25 @	13.75
Gray Forge	12.75 @	13.25
White and Mottled, different grades	12.25 @	12.75
Silver Gray, different grades.	12.75 @	13.75
Southern Charcoal, No. 1 Foundry	16.25 @	16.75
No. 1 Mill.	14.75 @	15.25
Southern Car-Wheel, standard brands.	21.75 @	22.75
Southern Car-Wheel, other brands	18.00 @	19.50
Hanging Rock Coke, No. 1 Foundry.	15.50 @	16.00
Hanging Rock Charcoal, No. 1 Foundry.	19.50 @	21.00
Hanging Rock, Cold Blast.	20.75 @	22.75

## Cleveland.

CLEVELAND, July 8, 1889.

**Iron Ore**.—Several small orders for non-Bessemer Ores have been declined during the past week, for the reason that the particular kind of Ore asked for had, in almost every instance, been sold up to the probable output of the mine. For the small amounts sold the price was \$3.60 @ \$3.90, f.o.b. vessels lower lake ports. A few orders for Bessemer Ores have also been declined for similar reasons, but most of the mines are still open to purchasers, and 10,000 and 15,000 ton orders are being placed very rapidly. Good Gogebic Ores can be bought for \$4.50 @ \$4.75, while the favorite Ores from this range bring \$5 @ \$5.15  $\frac{1}{2}$  ton, lower lake delivery. Pittsburgh and Shenango Valley furnace men are now filling out their supplies of Ore, and the sales for 1889 will soon exceed 5,000,000 tons, being already placed at about 4,700,000 tons. The Republic still maintains its \$5.75 rate, and additional sales of this Ore have been made during the past week at that price. Menominee Bessemer at \$4.50 @ \$5 are also in excellent demand. Ore is still coming down from the mines at a most remarkable pace, the receipts at Lake Erie ports being already over 1,200,000 tons in advance of the record on July 8, 1888. The eagerness with which vessel men accept the offers of tonnage lends additional assurance to the belief that there will be no increase in lake freights during the present season. It is also probable that there will be no material change in Ore quotations until the close of navigation makes necessary the filling out of stocks by overland shipment. Prices are now about 10  $\frac{1}{2}$  below those established at the beginning of the season.

**Pig-Iron**.—Although prices remain stubbornly low the demand steadily improves and almost enough orders can be

placed at present prices to keep all the furnaces engaged. Several of the transactions reported during the past week have involved something beyond the present demands of the purchasers. Local Iron men are encouraged by the assurance that the reduced Ore freights to Pittsburgh will be offset by corresponding reductions in Coke freights to Cleveland. This reduction has been guaranteed and the new schedule will be announced in a few days. Quotations are not firmly established and any tabulation of figures is sure to misrepresent the actual condition of the market, which is firm in tone and fairly active, despite depressing prices.

**Old Rails**.—Outside of a few sales of Old Americans at about \$21 the market is without life. Old Wheels are quoted at \$19, but no sales are reported.

## St. Louis.

OFFICE OF *The Iron Age*, 214 N. Sixth st.,  
ST. LOUIS, July 8, 1889.

**Pig-Iron**.—There has been a much larger inquiry during the past week, and the aggregate sales for the month of June are quite large. A number of Southern furnaces, with agencies in this city, have either withdrawn from the market or are asking an advance of from 25¢ to 50¢  $\frac{1}{2}$  ton over current rates, which temporarily puts them out of the market, as prospective buyers are not disposed to pay the advanced figures, but if the demand keeps up at the present rate it is only reasonable to suppose that values will be increased accordingly. Sales made during the past week were mostly small lots for immediate delivery. There is an immense amount of building now in progress in this city and vicinity, and the architectural works are kept busily engaged, and their custom is anxiously sought for, as they are now classed among the list of heavy consumers. There is some talk of low prices being made, but the Iron is generally of an inferior quality, and it is intimated by buyers that some parties making low quotations have been detected in the attempt to substitute a poorer quality of Iron than that contracted for. Of course this does not by any means apply to all low quotations made, and is an exception rather than the rule. For good-sized lots we quote as follows, for cash, f.o.b. St. Louis:

Southern Coke, No. 1 Foundry.	\$15.50 @	\$16.00
Southern Coke, No. 2 Foundry.	14.75 @	15.50
Southern Coke, No. 3 Foundry.	14.25 @	14.75
Gray Forge	13.50 @	14.00
Ohio Softeners	17.00 @	19.00
Lake Superior Charcoal	20.00 @	21.50

### Missouri.

Charcoal Foundry, No. 1	16.00 @	16.50
Charcoal Foundry, No. 2	15.00 @	15.50

### Tennessee.

Charcoal Foundry, No. 1	17.50 @	18.00
Charcoal Foundry, No. 2	17.00 @	17.50

Connellsville Coke, f.o.b. East St. Louis, \$4.40; St. Louis, \$4.55.

**Bar-Iron**.—Jobbers report a heavy demand, and prices are holding up without much apparent effort. Small manufacturers are buying quite liberally, and the demand from car-works and other industries of this class is improving daily. Mills are well filled with orders, and are enabled to obtain somewhat better prices than those quoted three weeks ago. It is evident the improvement in this department is substantial, and buyers seem disposed to take advantage of any concessions that are made, and are enabled to pick up odd lots occasionally that cost very little money. Small lots from store are quoted at \$1.80; carload lots, \$1.60.

**Barb-Wire**.—Trade in this department holds fairly well for the season, and from reports received from the representatives of the mills on the road prospects are unusually bright for a large fall trade.



Mills quote from \$2.75 to \$2.80 for Painted and from \$3.35 to \$3.40 for Galvanized; carload lots at from \$2.65 to \$2.70 for Painted and \$3.25 to \$3.30 for Galvanized, f.o.b. St. Louis.

## Detroit.

WILLIAM F. JARVIS & Co., under date of July 8, 1889, say: We are glad to be able, finally, to report a strong market, but at the same figures as have governed the Pig-Iron scale for some time past, the most important feature being the large sales and prompt moving of Lake Superior Charcoal. There can be no reasonable doubt but that some advances will shortly be made on this metal, unless a sharp cessation of buying should occur. We have notices from several furnaces in Ohio of advances on Foundry grades of from 25¢ to 75¢ per ton, and at the same time the Southern furnace men absolutely decline orders at present rates except for prompt delivery. This position has been forced upon them by the number of inquiries and in a few cases large sales, with deliveries running to May of next year. Both rail and lake rates are ruling low, and in consequence of this and a better outlook, furnace men are generally more bright. There is an absolute dearth of transactions in old material. Figures below are nominal:

Lake Superior Charcoal, all numbers	\$19.00 @ \$19.50
Lake Superior Coke, all ore	18.00 @ 18.50
Lake Superior Coke, cinder mixed	17.50 @ 18.00
Standard Ohio Black Band	17.50 @ 18.50
Southern No. 1	16.50 @ 17.00
Southern Gray Forge	15.00 @ 15.50
Southern Silvery	16.00 @ 16.50
Jackson County (Ohio) Silvery	18.00 @ 18.50
Old Wheels	18.50 @ 19.00

## Chattanooga.

Office of *The Iron Age*, Carter and 9th Sts., CHATTANOOGA, July 8, 1889.

**Pig-Iron.**—There appears to be a disposition on the part of the furnaces to withhold quotations as much as possible. The sales that have been made during the past week have been at an average of 50¢ higher than prevailed two or three weeks ago, and the indications are that another advance will soon take place. Both Foundry and Mill Irons are now in good demand, and the furnaces would experience no trouble at all in disposing of their entire capital at present prices. Mottled and White are in much better supply, and some of the furnaces have quite large stocks on hand. Pipe furnaces now are taking large quantities of No. 3, as the demand for Pipe has been and is now very great, and some of them have not been able to respond favorably to inquiries. The demand for Pig-Iron from Southern foundries has increased considerably during the past two or three weeks, and the aggregate that is now being used in this quarter is a large item with the Southern Iron producers. Sales that are being made by the furnaces in this district are on a basis of \$13 for No. 1, \$12.50 for No. 2 and \$12 for No. 3, cash in 30 days, which can be taken as a very good indication of what prices are just now, although an offer for 500 tons at these prices was refused last week.

## Cincinnati.

Office of *The Iron Age*, Fourth and Main Sts., CINCINNATI, July 8, 1889.

**Pig-Iron.**—A strong and confident tone has prevailed in the local market for Pig-Iron during the past week, and an advance of 25¢ @ 50¢ per ton has been established on almost all grades. The demand has been active and some large transactions have been made, but some of them have been kept secret through the erroneous idea that the market would be alarmed and the advance accelerated to

such an extent that orders in hand could not be filled to such an advantage if the truth were known. Pipe-works, foundries and various implement manufacturers have been among the buyers during the week, and orders from car-works have not been small, but the latter have not been conspicuous. Northern as well as Southern furnaces have obtained higher prices and more advantageous deliveries, and Foundry as well as Mill grades have shared in the improvement; even Mottled Iron has sold to better advantage. A further advance of 75¢ @ \$1 per ton is confidently predicted as the material outcome of existing conditions, but all tendency toward a boom is, of course, discouraged by the regular trade. Speculative purchases have apparently ceased. The volume of business, aside from the few large sales made, has been fair in the aggregate. Among the larger sales reported were 4000 tons Virginia Gray Forge at \$15; 500 tons No. 1 Southern Coke Foundry at \$15.25, cash; several thousand tons of Nos. 2 and 3 Southern Coke foundry at \$14.25 @ \$14.50 and \$13.75 @ \$14 respectively. Gray Forge has been sold in considerable amounts at \$13.25 @ \$13.50, and at the close the outside rates prevail. Several hundred tons Mottled Iron sold at \$12 @ \$12.25, cash, here. The following are the approximate prices current here at the close for cash, f.o.b.:

Foundry.	
Southern Coke, No. 1	\$14.75 @ \$15.25
Southern Coke, No. 2	14.25 @ 14.75
Southern Coke, No. 3	13.75 @ 14.25
Ohio Soft Stone Coal, No. 1	15.75 @ 16.25
Ohio Soft Stone Coal, No. 2	14.75 @ 15.50
Mahoning and Shenango Valley	16.00 @ 16.50
Hanging Rock Charcoal, No. 1	20.00 @ 22.00
Hanging Rock Charcoal, No. 2	19.00 @ 21.00
Tennessee and Alabama Charcoal, No. 1	17.50 @ 18.00
Tennessee and Alabama Charcoal, No. 2	16.50 @ 17.00
Forge.	
Strong Neutral Coke	13.25 @ 13.50
Mottled Neutral Coke	12.00 @ 12.25
Gray Forge	13.25 @ 13.75
Car-Wheel and Malleable Irons.	
Southern Car-Wheel	20.00 @ 23.00
Hanging Rock, Cold Blast	22.00 @ 25.00
Lake Superior Car-Wheel and Malleable	20.00 @ 20.50

**Manufactured Iron.**—A stronger tone has prevailed and a more confident feeling is entertained, but the volume of business has not been increased to any important extent.

**Old Material.**—There has been some inquiry for Old Rails, and only moderate offerings at \$20 @ \$20.50 per ton. Old Wheels have been dull and are nominally quotable at \$17 @ \$18, spot.

**Nails.**—There has been a better demand and a firmer tone has prevailed. Iron and Steel Nails, 12d @ 40d, sell at \$1.85 @ \$1.90 per keg, with 10¢ rebate in carload lots at the mills.

Mr. C. G. Blake has removed to the First National Bank Building. Mr. C. E. Ilsley, formerly with Thos. Mack, has formed a business connection with Mr. Blake of a satisfactory nature. Mr. Ilsley's friends wish him success in the new field.

## New York.

Office of *The Iron Age*, 65 and 68 Duane street, NEW YORK, July 10, 1889.

**Pig-Iron.**—The situation seems to have changed completely from that of but a month ago. Buyers are hunting for Iron now, instead of the sellers anxiously looking for buyers. Sales have been made at advanced prices during the week, although just at present the demand is not so heavy as it was ten days or two weeks since. Instances of a better feeling are quite numerous. A lot of No. 1 Southern which was offered here at \$16.25 early in June without being taken has just been sold at \$17. The agents of the

various companies are now receiving orders subject to confirmation by the furnaces. They are refusing to contract for deliveries through the balance of the year, and it is somewhat difficult, in fact, to secure deliveries later than September. The Pig-Iron Storage Warrant Company were able to secure a considerable quantity of Iron in their yards up to quite recently, but they are now having difficulty owing to the demand for Iron from consumers. The negotiations through this company were growing, and a decided disposition was manifested among speculative buyers to secure warrants, but this has been checked for the time. It will probably require another season of dullness to fully develop the operations of the company, although the officers are sanguine that at an early day they may be able to secure enough Iron in their yards to make their warrants negotiable on the exchanges. Some good-sized sales of Iron were made by the commission houses during the week, and the feeling is now very strong, although a further advance in prices is not looked for immediately by the most prominent leaders of the trade. We quote Northern Irons at tidewater, \$17 @ \$18 for No. 1, according to brand; \$16 @ \$17 for No. 2; \$15 @ \$15.75 for Gray Forge. Southern brands are quoted \$16.50 @ \$17 for No. 1; \$15.75 @ \$16 for No. 2; \$15.50 for No. 3, and \$14.50 for Gray Forge, all delivered at New York.

**Scotch Pig.**—A very light trade is in progress. Prices continue as follows: Eglinton, \$19; Dalmellington, \$19.50; Langloan, \$21.25; Summerlee, \$21.50, and Coltness, \$21.50.

**Spiegeleisen.**—Business is very quiet, and 20¢ is still quoted at \$28 @ \$28.50, with 80¢ Ferro at \$59 @ \$60. Inquiries were made by Western consumers without leading to results.

**Wire Rods.**—There is nothing doing in foreign Wire Rods, the nominal quotation still being \$43, ex-ship. Domestic Rods have been sold by Western makers to Eastern Wire mills at prices lower than foreign ex-ship.

**Finished Iron and Steel.**—The week has been very quiet in this line. Most of the mills are shut down, making their annual repairs, while large consumers of Iron and Steel are taking stock and not making heavy purchases at present. Prices are about as follows for delivery on dock: Sheared Plates, 2.05¢ @ 2.1¢; Universal Mill Plates, 2.1¢ @ 2.15¢; Angles, 2.05¢ @ 2.1¢; Tees, 2.5¢ @ 2.6¢; Beams and Channels, 2.8¢. Tank Iron, 2.05¢ @ 2.1¢; Shell, 2.4¢ @ 2.5¢; Steel Tank, 2.25¢ @ 2.3¢; Shell, 2.4¢ @ 2.5¢; Flange, 2.7¢ @ 2.8¢; Fire-box, 3.25¢ @ 4¢; Common Bar Iron, 1.6¢ @ 1.65¢; Medium, 1.7¢; Refined, 1.75¢ @ 1.9¢.

**Merchant Steel.**—Dealers have experienced a very quiet week. The same influences prevail in this branch as those narrated under Finished Iron and Steel. Quotations continue as follows: Tool Steel, good brands, in large lots, 7¢ @ 7½¢; specials, 12¢ @ 20¢; Crucible Spring, 3½¢ @ 4¢; good Open-Hearth Machinery, 2.30¢ @ 2½¢; Bessemer ditto, 2¢ @ 2½¢; Open-Hearth Spring, 2½¢ @ 2¾¢; Tire, 2.15¢; Toe-Calk, 2½¢; Sheet, 6½¢, 8½¢ and 10½¢.

**Steel Rails.**—Transactions are reported in this market amounting to about 10,000 tons. The largest lot sold was one of 6000 tons to the East and West Railroad of Alabama, at a price covering delivery in the South. It is rumored that a large lot of Rails, probably 24,000 tons, was purchased from an Eastern Pennsylvania mill for delivery to a new railroad project in the South. A very good demand for Rails is noted, and it is possible that a satisfactory business will now be done for some

time. Quite a number of projects which have been hanging fire are getting their financial arrangements in good shape, and it is confidently expected that the Rail market will in a short time be in a very much better condition than it has yet been this year. The mills are getting quite full of work, and prices are firm at \$27.50 @ \$28, at mill. Some mills are naming a still higher rate as they are not in shape to sell on early deliveries. The demand for Light Steel Rails continues excellent, and the facilities of some manufacturers are being taxed in this direction.

**Track Supplies.**—Good orders are in the market and negotiations will probably be closed this week. Quotations are about 1.75¢ at mill for Steel Fish-Plates, and 1.85¢ @ 2¢ for Iron; 2.70¢ @ 2.75¢ for Track-Plates with square Nuts; 2.90¢ @ 3¢ for Plates with Hexagon Nuts, and 2¢ for Spikes.

**Old Material.**—The Southern Old Iron Rails referred to last week are reported to have brought \$23, and have therefore been removed from the market without disturbing values. A good demand is reported for Old Rails, and an offer of \$23 which was made for 1000 tons was refused. They are in scant supply, and dealers in other markets are endeavoring to place orders here. A lot of 500 tons of Old Steel Rails was sold at \$18 on the line of the road. Old Car Wheels are quiet and are quoted at \$19 @ \$20, according to quality. A good demand exists for No. 1 Scrap, which is worth about \$21.

## Financial.

The business situation is, by general consent, pronounced hopeful, though somewhat complicated. In several instances paradoxes are presented that do not admit of a ready explanation. While bank clearings throughout the country, not only for June, but for the last six months, show a remarkable increase irrespective of speculative transactions, pointing clearly to a decided expansion in legitimate business, the prices of commodities since January 1 have tended downward with rare exceptions. Railroad earnings have increased, yet there have been more receiverships and bankruptcies. The volume of products, as a rule, is in excess of a year ago, and the aggregate of our foreign trade as represented both by exports and imports shows a material increase, yet the number of business failures during the first half of the present year compares quite unfavorably with those of the same time in 1888. It is noticeable, too, that while money is cheap there was a decrease in the aggregate amount of money in circulation in the month of June equal to \$17,000,000. An important factor just now is the favorable outlook for crops throughout the corn and wheat belt. The winter wheat harvest has far advanced, with a heavy yield reported in several States. In California it is generally allowed that the harvest is the largest ever gathered, and 1,500,000 tons surplus is freely predicted. The Kansas State Secretary of Agriculture estimates the total wheat yield at 34,000,000 bushels, which is about double that of last year. In Texas both wheat and corn are secured. A convention of United States Appraisers from various ports met at the office of Appraiser Cooper to discuss and agree upon the various grades of classification, so as to make them uniform at all the ports.

The stock markets are influenced by railroad complications, and efforts of managers this week, at meetings in New York and Chicago, designed to promote harmony, are watched with anxiety. President Roberts, of the Pennsylvania Railroad, is quoted as saying he is confident that the Trunk Line Association is strong

enough to handle the rate problem precipitated by the Baltimore and Ohio in reducing its tariff on corn and wheat, and will remain intact. He does not see what the Baltimore and Ohio will gain by the cut, and has faith that the Trunk Line Association can dispose of it quickly. President Samuel Sloan, of the Lackawanna Road, said: "It has cost us too much to reach our present position and maintain fairly profitable rates for us to abandon it hastily." President Newell, of Lake Shore, is represented as opposed to a reduction of rates. As respects the condition of the market, the smaller volume of trust transactions is noted as a marked improvement. There was much hesitation pending the announcement of the decision in the Sugar Trust case. On Monday the tone was heavy for all except Jersey Central, which rose on the declaration of a quarterly dividend of 1½%. Surprise was expressed at the strong remonstrance of Maine business men before the United States Senate Committee in Boston against curtailing the privileges of the Canadian Pacific. On Tuesday the decision of the General Term of the Supreme Court affirming Judge Barrett's decision revoking the charter of the North River Sugar Refining Company started liquidations in sugar refineries, which closed at 113. American Cotton Oil fell, but partially recovered. National Lead sold down to 31½ and left off at 31¾. Nothing was known of the results of the presidents' meeting until after the close. Chicago was a heavy buyer of the grangers, trunk lines and coalers, but the interest of the day centered in St. Paul, Northwest, Reading and Union Pacific, and the tone was strong at the close.

United States bonds are quoted as follows:

U. S. 4½s, 1891, registered.....	106¾
U. S. 4½s, 1891, coupon.....	106¾
U. S. 4s, 1907, registered.....	128¾
U. S. 4s, 1907, coupon.....	127¾
U. S. currency 6s.....	118

Time money is not so easily obtained, now that the outflow of currency for crop purposes has commenced. For 60 to 90 days contracts are made at 4%; for four and five months, 4½%, and for all the year, 4½% @ 5%; 60 to 90 day indorsed bills receivable, 4½% @ 5%, and good single names, 5% @ 6½%.

The general markets have been quiet, aside from speculative influences. In wheat spots are up about 1¢ @ bushel, checking exports. Breadstuffs are stronger, with moderate trading. Corn is in more demand. Coffee is unsettled, trading light. Spot cotton is ¼¢ higher, and active. A new bale from Georgia sold at 16½¢. Sugars are strong—buyers trying to break prices.

Sterling exchange weakened decidedly, posted rates being down to \$4.87 @ \$4.89. As a result of the change gold exports have wholly ceased. The banks have shipped considerable currency to the interior, in anticipation of crop movements, and this loss, together with a wide expansion in loans, amounting to \$5,946,700, cut down the surplus reserve \$2,574,200 to \$5,018,025, which is \$19,298,775 less than at this time last year, but only \$1,334,425 less than in 1887. Gold exports this week were only \$97,000. Since January 1 the total is \$51,143,237, against \$21,039,000 for the same time last year. London papers anticipate a renewal of the demands on the Bank of England, in the absence of shipments from the United States, which have done so much to keep the market easy.

A tabulated statement shows eight railroads sold under foreclosure in the first six months of 1889. These roads represent 1575 miles, \$48,399,000 of funded debt and \$44,274,000 of capital stock. Eight roads have also passed into the hands of receivers, with a mileage of 2690 miles, \$66,458,000 of bonded debt and \$59,112,-

000 of capital stock. H. J. Hayden, second vice-president of the New York Central Railroad, temporarily succeeds Pool Commissioner Fink, resigned.

Clearing-House returns from leading cities show an increase of 27.5% compared with the corresponding week last year; in New York the increase is 37%; outside of New York, 14%.

The large imports at New York and other ports for the month of May left a small balance of trade against this country for that period, notwithstanding the increased volume of exports. The total value of foreign goods and specie landed at all the ports in May was over \$71,000,000, against less than \$62,000,000 for the corresponding month of last year. The exports increased in much greater proportion, the total for the month being \$70,000,000, against only \$57,000,000 in May of last year. The difference is very small between the two accounts. So far from the balance of trade having been heavily against this country for months, the reverse is true, the last official bulletin showing an excess of exports for 11 months of the fiscal year at \$58,597,509.

## Metal Market.

**Copper.**—Since our last report London gave way with spot Copper from £41. 10/6 to £41. 5/, futures remaining unchanged, £40. 15/; sales, 500 tons. In our own market consumers continue being supplied by the Lake companies at 12¢, and it sells jobbing at 12½¢, while casting brands have been selling at 10½¢ @ 11¢. The general feeling in our Copper market has been somewhat unsettled by the following dispatch: "Boston, July 3.—Copper matters are all at sea again. The agreement made on May 15 between representatives of the various Lake Superior Copper-producing interests provided for the sale at 12¢ @ lb of the stock of Copper on hand, proportionately to the amount of product. The Calumet and Hecla Company now announce that the Tamarack Company decline to limit their sales pro rata with other Lake companies, and the agreement, therefore, is terminated. The Calumet and Hecla people say that they regard it as no longer in force. A conference was to have been held in New York this week to try and rearrange matters, but this appears to have fallen through, and matters are in a chaotic condition again." Since then the inquiries made at the offices of the companies and elsewhere have afforded no light. The Tamarack is reported to be still selling the products of its Western rolling-mill at figures relatively lower than Eastern manufacturers. To-day's New York *Daily Commercial Bulletin* says: "Messrs. J. B. Haggin, of the Anaconda, and R. M. Thompson, of the Baltimore Company, were in conference with the Lewisohn Brothers yesterday, and a member of the latter firm it was reported is soon to confer with the Lake Superior magnates in Boston. The inference from all this that Mr. Haggin is the particularly troublesome personage in the market at the present time, and that the others are endeavoring to make some arrangement whereby the Anaconda product will be prevented from demoralizing the market. The Calumet and Hecla, Tamarack and Boston and Montana interests, it is believed, are inclined to work harmoniously for mutual welfare."

**Tin.**—Tin has again receded 10/ in London since our last report, spot coming £88.10/, instead of £89, and futures £89, instead of £89.10/; sales 200 tons. The weakness in London demoralized our market considerably, and after a sale last week of 50 tons September at 19.65¢, it became entirely quiescent, with quotations



nominal at 19.50¢ @ 19.65¢ spot, 19.60¢ @ 19.70¢ July and 19.60¢ @ 19.75¢ August. The market closes dull at 19.60 spot and 19.65¢ futures to-day. **Tin-Plates.**—Our own market has undergone no change, remaining dull. On the other hand, makers in Wales maintain their unflinching position both as regards spot and futures, and whatever business is done with them is at the figures they insist upon. We quote as heretofore, large lines, ordinary brands, @ box: Siemens-Martin Steel, Charcoal finish, \$4.75 @ \$5.50; Coke finish, \$4.55 @ \$4.65; Terns, \$4.12 @ \$4.30; Coke Tins, \$4.22½ @ \$4.32½, and Wasters \$4.12½ @ \$4.15.

**Lead.**—On Friday last 50 tons were sold in the open market at 3.95¢, and on Saturday 50 tons at 3.90¢, the winding up figure to-day being 3.90¢ @ 3.95¢, with a dull feeling. The following was received from Washington last week: "It was stated at the Treasury Department this morning that the decision in the matter of Mexican Lead and Silver Ores would not be made for three weeks. There are some intimations that the Department may decline to decide it, and may, instead, refer the subject to Congress. One important official says that to decide would be to legislate." To-day's New York *Herald* contains a long telegram from El Paso, dated July 9, thoroughly reviewing the Mexican Lead-Ore question, and winding up as follows: "Enough has been said to show that Secretary Windom has a question full of dynamite before him for action and one that he can almost decide in any way; with a strong inducement, amid legal doubt and conflict, to decide it according to immediate party exigency. It is almost safe to say that whichever way he does decide it he will soon be wishing that his decision had been the other way. If the miners of the Pacific Slope are to be believed they are threatened with early extinction if the present rate of revival of abandoned Mexican mines continues and a free import of their base products is permitted under a system that has raised such imports from less than 2000 tons in 1884 to an estimate of 90,000 tons for the current year at the single port of El Paso, and which promises to grow in the same proportion for many years to come."

**Spelter.**—The market, under a good steady consumptive demand, has improved to 5.10¢, Common Domestic, after a sale that was made previously at 5.05¢, while Silesian, which is higher on the other side, cannot be sold for less than 5.87½¢ @ 5.90¢.

**Antimony.**—While there remains an active current inquiry, the scarcity of the supply, present and prospective, keeps Cookson's at 16½¢ and Hallett's at 15½¢.

## Coal Market.

The Anthracite Coal trade remains in about the same position as for some time past, very considerable deliveries being in progress in execution of former orders, but with actual selling prices little, if any, above those of the May schedule. Large quantities of Coal are being produced, and, with struggling lots seeking buyers, it would not be strange if prices show some irregularity, sales being reported as low as \$4.10 @ \$4.25 for Stove. Comparatively little new business is offering, but the active season is supposed to be near at hand. The confidence of operators is shown by the very free output at the mines, which has steadily increased for a month past, in face of the liberal stocks at tide-water and interior points. The Lehigh region is particularly active, apparently ignoring all shackles of whatever kind, and the Reading region in like manner is being freely worked. In regard to prices the Philadelphia *Ledger* says: "It is well known

that many orders for Anthracite were accepted by the larger coal corporations of both New York and this city in May and June for delivery at the May prices or less any time before August, and it is said that some were accepted for delivery up to September 1, one instance being reported of a contract for delivery by December 1. There is no doubt that some of the companies are stocking Anthracite in the East and at the Western lake ports, so that when the trade nearer home improves and becomes active they can more conveniently supply that demand." The regular quotations are at New York shipping ports, f.o.b.: Broken, \$3.90; Egg, \$4.15; Stove, \$4.40; Chestnut, \$4.15.

Bituminous Coal remains unchanged; quotations, \$3.25, alongside, but actual prices variable, with ample supplies. Delegates representing 14,000 Coal miners of Blair, Cambria, Clearfield, Center and Jefferson counties met in Altoona and decided to call out all miners who are working under the district prices.

W. T. Carter & Co.'s No. 2 Slope, near Hazleton, was burnt 6th inst.; loss \$70,000.

## Imports.

### Hardware, Machinery, &c.

Boker, Hermann & Co., Mdse., cs., 10; Arms, cs., 16  
Clark, G. A. & Bro., Mach'y, cs., 145  
Dolphin Mfg. Company, Mach'y, cs., 3  
Degrauw, Aymar & Co., Chains, 8; do., cks., 5  
Downing, R. F. & Co., Ironware, cs., 8  
Field, Alfred & Co., Mdse., cs., 20  
Frasse, P. A. & Co., Mdse., cs., 2  
Folsom, H. & D., Arms Co., Arms, cs., 3  
Graef Cutlery Company, Cutlery, cs., 5  
Hartley & Graham, Arms, cs., 2  
Henderson Bros., Sewing-Machines, cs., 32  
Hensel, Bruckmann & Co., Arms, cs., 3  
Hines, H. A. C., Machine, 1  
Kastor Ad., Mdse., cs., 1  
Kittridge, B. Arms Company, Arms, cs., 4  
Lau, J. H. & Co., Arms, cs., 10  
Mecham Arms Company, Arms, cs., 16  
Merchants Despatch Company, Arms, cs., 4  
Oastler, W. C., Mach'y, pgs., 13  
Sheldon, G. W. & Co., Mach'y, piece, 1  
Sutro Bros., Mach'y, case, 1  
Schoverling, Daly & Gales, Arms, cs., 6  
Sellers, W. B., Mdse., cs., 5  
Tryon, E. K. & Co., Arms, cs., 4  
Taylor, Thos., Mdse., cs., 7  
Van den Toorn, W. H., Arms, cs., 12  
Velasco Pardo & Co., Mach'y, pgs., 2; do., case, 1  
Wiebusch & Hilger, Lim. Hdw., cs., 14; Guns, cs., 35; Mdse., cs., 59; Chains, cks., 28  
Wright, Peter & Co., Mach'y, pgs., 7  
Williams & Rankine, Guns, cs., 2  
Order, Hdw., cks., 4; Iron Pots, 10

## British Iron and Metal Markets.

(Special Cable Dispatch to The Iron Age.)

LONDON, WEDNESDAY, July 10, 1889.

Block-Tin was depressed early in the week and looked like breaking down under the weight of pressure to sell. Large quantities were taken up at £88. 2/6, however, and those purchases caused a quick recovery, leading subsequently to a fairly strong market. During the past few days the demand has slackened off, and prices have reacted £1 from the highest point on prompts and £1. 5/ on futures.

There have been no important developments in the Copper market, and prices have shown only moderate fluctuation. Producers held back until within a few days, and consumers purchased quite freely, with the effect of stiffening prices. Subsequently statements had circulation to the effect that there is likely to be a falling off soon in the consumption, and this caused somewhat sharp competition between producers and other holders, and a large business took place at about £41. 10/ for Merchant-Bar prompts. There was, however, no extraordinary pressing of stock for sale. The arrivals

from America have been rather smaller. Merchant-Bars were weaker to-day, selling at £40. 15/ for prompts. Tin-Plate has been quiet pending the quarterly meeting on Thursday, but makers have raised their prices on some descriptions and are very firm. The exports to America last month were 29,000 tons, against 23,000 tons during June, 1888. The stock at British shipping ports is estimated at 343,000 boxes, against 226,000 boxes at the corresponding period last year.

Pig-Iron warrants have undergone less fluctuation, but the market is steady. Speculation has been smaller, although consumers have again purchased quite freely. The exports to the United States during June were 7,000 tons, against 13,000 tons last year. Makers' brands of Scotch are generally higher, as is also Middlesborough Pig.

Prices for Finished Iron are stronger all around, and business is brisk. Steel of all descriptions continues strong and the demand is brisk.

There is a good healthy demand for Old Material and prices are very firm.

**Scotch Pig.**—The market strong, with prices higher for all brands and the demand fairly active.

No. 1 Coltness, f.o.b. Glasgow	54/
No. 1 Summerlee, " "	53/6
No. 1 Gartsherrie, " "	51/9
No. 1 Langloan, " "	53/6
No. 1 Carnbroe, " "	46/3
No. 1 Shotts, " at Leith	52/6
No. 1 Glengarnock, " Ardrossan	51/6
No. 1 Dalmellington, " "	45/
No. 1 Eglinton, " "	43/6
Steamer freights, Glasgow to New York, 2/6;	
Liverpool to New York, 10/.	

**Cleveland Pig.**—Higher prices rule and the market is very firm, but not active. No. 3 Middlesborough quoted 40/, prompt, by makers.

**Bessemer Pig.**—There continues to be a brisk trade in this line at firm prices. West Coast brands, mixed numbers, 49/6, f.o.b. shipping point.

**Spiegeleisen.**—The demand continues fairly active and the market is firm. English 20 % quoted 80/, f.o.b. at N. W. England shipping point.

**Steel Rails.**—There is no abatement of the demand and the late advance is maintained. Heavy sections quoted at £4. 15/ @ £4. 17/, and light sections £5. 2/6 @ £5. 5/, f.o.b. at N. W. England shipping point.

**Steel Blooms.**—Prices remain very firm and the demand is good. We quote £4. 7/6 for 7 x 7, f.o.b. at N. W. England shipping point.

**Steel Billets.**—The market continues strong and fairly active. Bessemer, 2½ x 2½ inch, £4. 12/6, f.o.b. at N. W. England shipping point.

**Steel Slabs.**—Makers are firm, but only a moderate business is passing. Bessemer, £4. 12/6, f.o.b. at N. W. England shipping point.

**Old Rails.**—Holders are firm and the demand is fair. Tees quoted at £3. 5/ @ £3. 7/6, and Double Heads, £3. 12/6 @ £3. 15/, c.i.f., New York.

**Scrap-Iron.**—There is a moderate trade at steady prices. Heavy Wrought quoted at £2. 2/6 @ £2. 5/, f.o.b.

**Crop Ends.**—Demand moderate but prices held firmly. Bessemer quoted £2 12/6 @ £2. 15/, f.o.b.

**Spelter.**—Business still active and prices very firm. Quoted at £19. 5/ for ordinary Silesian.

**Tin-Plate.**—There has been no material change in the condition of the market. We quote, f.o.b. Liverpool:

IC Charcoal, Alloway grade.....	15/3 @ 15/6
IC Bessemer Steel, Coke finish.....	13/6 @ ..
IC Siemens.....	13/9 @ ..
IC Coke, B. V. grade.....	13/ @ ..
Charcoal Terne, Dean grade.....	12/ @ 12/3

**Manufactured Iron.**—Trade continues brisk and prices remain firm. We quote, f. o. b. Liverpool:

Staff, Marked Bars.....	£ s. d. £ s. d.
Common.....	@ 8 2 6
Staff, Bl'k Sheet, singles.....	@ 6 5 0
Welsh Bars (f.o.b. Wales).....	5 12 6 @ 5 15 0

**Copper.**—Demand is moderate at present, and the market rather weak. To-day's prices for Bars were £40. 15/, spot; £40. 10/, three months' futures. Best Selected, £46. 10/

**Tin.**—The market rather weak to-day and dull. Straits quoted at £88. 7/6, spot, and £88. 15/ for three months' futures.

**Lead.**—Demand light and the market rather weak. Quoted £12. 7/6 for Soft Spanish.

## Foreign Markets.

### EQUIVALENTS.

Franc, Peseta or Lira.....	Cents.
Florin (Netherlands).....	19.2
Florin (Austria).....	40.2
Florin (Portugal).....	35.9
Milreis (Brazil).....	\$1.08
Milreis (Germany).....	54.6
Mark (Germany).....	23.8
Kilogram.....	Pounds
Picul.....	2.205
	134.

### BRAZIL.

**PARA,** July 2, 1889.—**India Rubber.**—The market is steady at 1800 reis, with 27d exchange. Indications are to the effect that the receipts will be moderate and not exceed those of last year. Two steamers cleared the last week in June for New York with together 100 tons of Rubber.

**P. S.**—July 5.—Our market remains firm and tending upward. Exchange—Is ¼d higher.—Per cable direct.

### CHILI.

**VALPARAISO,** May 10, 1889.—**Copper.**—Only a few mines still produce, and a good many smelting-works have stopped operations for the lack of Ore. The only sale transpired was of a lot of 100 tons at \$15.50 @ quintal. **Coal.**—The arrivals from England continue light, but Australia has shipped all the more. We quote Newcastle 37/ @ 38/ and Australian 26/. Exchange—Has declined from 26½d to 26d.—Weber & Co.

### EAST INDIES.

**PENANG,** May 23, 1889.—**Tin.**—Receipts amounted during the fortnight to 8600 piculs, of which Chinese took 5000 and Europeans 3600. The market opened at \$34.60, advanced to \$35.12½ and closed at \$34.40. Receipts are on the increase. **Gum Benjamin.**—Some small lots of fine quality have been picked up at \$46 @ \$50 @ picul.—Schmidt Kustermann & Co.

**MANILA,** July 1, 1889.—**Hemp.**—The actual price is nominally \$13.75 @ picul, against \$8.50 same date last year, equaling ½ ton, cost and freight, £44. 12/6, against £28. 15/. Clearances for the United States since last cable amounted to 6000 bales, as compared with none during the corresponding period of last year; since January, 134,000, against 91,000; loading for do., 9000, against 8000; cleared for England, 133,000, against 173,000; loading for do., 16,000, against 5000; cleared for all other ports, 23,000, against 42,000; receipts at all ports since last cable, 15,000, against 3000, and since January 1, 304,000, against 301,000 in 1888 and 232,000 in 1887. **Freight.**—\$7.50, against \$5.50. **Exchange.**—Six months' sight, on London, 3/5¼, against 3/5¼.—Ker & Co., per cable direct to their agent in New York, Mr. Charles Nordhaus, 89 Water street.

**COLOMBO, CEYLON,** May 23, 1889.—**Plumbago.**—Our market has displayed great firmness at the following quotations in rupees @ ton: Large lumps, 145 @ 170; ordinary lumps, 125 @ 160; Chips, 80 @ 95, and Dust, 40 @ 65. Following are the amounts exported since October 1: To England, 104,798 cwt.; to Venice, 102; to Hamburg, 6206; to Antwerp, 6904; to Bremen, 1254; to Holland, 437; to India, 139; to Australia, 287, and to the United States, 85,951; together, 206,078, against

164,453 in 1888, 142,081 in 1887 and 127,875 in 1886. **Cair Yarn.**—Nos. 1 to 4 may be quoted 7 @ 13 rupees @ cwt. **Exchange.**—Six months' sight on London, 1/4¼.—Volkart Bros., Ceylon and Malabar Coast, to their agent in New York, Mr. John W. Greene, 82 Wall street.

### SPAIN.

**BILBAO,** June 15, 1889.—**Iron Ore.**—There has been no lack of orders, but these have not been large, being limited to small cargoes on the spot, prices meanwhile being well sustained at 8/4 @ 8/9 Campanil, and superior Rubios at 7 @ 7/3; inferior ditto at 6/9 @ 7/. Considering the time of the year the amount shipped has been satisfactory. Freight has fluctuated but little, but the tendency remains decidedly downward. Total shipments so far sum up 1,845,031 tons, against 1,748,158 same time last year. **Pig-Iron.**—During the week 2927 tons have been exported and 1532 tons shipped coastwise. **P. S.**—June 22.—Sales of Ores during the week have been restricted to a few cargoes of Rubios for immediate shipment. Quotations are unaltered. Shipments have been lighter, steamers proceeding to other ports for better freights; still drooping in this port. Total Ore export since January 1, 1,910,805 tons, against 1,827,669 in 1888. **Pig-Iron.**—There were exported 860 tons, while 1046 went coastwise.—Bilbao Maritimo Comercial.

### GERMANY.

**HAMBURG,** June 29, 1889.—**Iron.**—An active demand has continued to be noticeable in Rhenish Westphalia for all sorts of Iron, well sustained at the higher rulings, because Coal is so much dearer than formerly. It would not be advisable, however, to push the price of Pig-Iron any higher, inasmuch as by doing so exportation, on which the blast-furnaces largely depend, would be materially curtailed. The stock thereof declined in May from 50,001 tons to 45,433; May production fell from 124,785 tons in April to 84,511, and sales were 89,169, against 126,777 in April. Spiegel has been exceptionally lively, the American demand being on the increase; the price for 10 to 12 % is 66. A large American order for 20 % dropped in. Russia is also in the market for Spiegel. Foundries have at no time run short of Coal; their steady demand has reduced the stock of Foundry Pig notably. Stocks of Bessemer and Thomas have, on the other hand, increased slightly. The quotation for Forge Pig is 59.50 @ 62; for Foundry ditto, 59 @ 66; White Steel Iron, 61 @ 62; German Bessemer, 57 @ 58; Thomas, 47 @ 48; Luxembourg, 36 @ 41. Merchant Iron sells with great ease; makers complain that it is not high enough in view of the rise in Pig. Orders for Structural Iron abound; so much so that makers find it difficult to attend to all of them at a time. This may also be said of Boiler-Plates. All other branches in the Iron and Steel trades are doing tolerably well. The Prussian State railroad administration has just ordered 9000 freight and 400 passenger cars. The Dortmund quotation for Wire-Rods is 110 to 115; for Steel Rails, 125 to 130, and ditto for mines, 115 to 120 marks per ton. **Metals.**—Electrolytic Copper has been sold at 54 marks the 50 kg.; Spelter at 16.62½. The Schneeberg Silver mines, which yielded most in 1875, and have since gradually declined in productiveness, suddenly again promise to become a "bonanza."—Borsenhalle.

### BELGIUM.

**BRUSSELS,** June 29, 1889.—**Iron.**—Both rolling-mills and Steel-works are doing well, foundries less so, especially those working for the export trade. The latter have not yet been able to raise the price of their makes in proportion to the current ruling of Pig, now commanding from 5 francs to 6 francs @ 100 kg. This advance has been brought about by the scarcity of and consequent improvement in Coke. The Athus blast-furnaces sold out all the Pig-Iron they can turn out for the remainder of the current year. Merchant Iron is in good request, and would be higher by this time but for the competition coming from France.—Monteur des Intérêts Matériels.

**The Immense Area of Canada.**—The greatness of Canada constitutes the theme of an address delivered by Hon. Benj. F. Butler. "The first great fact," he says, "to be taken into consideration when we speak of the annexation of Canada is her immense area, which includes 40 per cent. of all the possessions of Great Britain, wherever situated on the globe. There is room for three British Indian possessions within the Dominion of Canada, and enough territory left over out of which the area of Great Britain might be five times taken. Modern empires are pigmies to it, for there is room in Canada to carve

out nine German empires. The Dominion of Canada holds within its boundaries an area of 3,470,392 square miles, while the United States (not including Alaska, of which the limits are unknown) has an area of 2,970,000 square miles, or rising 500,000 square miles less than Canada. Canada has quite one-quarter more land fitted for wheat cultivation than has the whole United States. The average production of wheat per acre in the United States in the year 1887 was a little over 12 bushels, while in the same year, in Manitoba, where we hardly realize there is ought to support life, the yield was 12,500,000 bushels, at an average of 27 bushels to the acre. It may be safely said that, leaving out the worn-out wheat lands of the United States, Canada has twice the extent of unworn-out lands, which produce an average of more than twice the number of bushels to the acre than are produced by the average lands of the United States, and on some lands wheat has been raised in the largest producing quantities for 20 years in succession without a fertilizer."

### The Scripps League Expedition.

The Scripps League, composed of the Detroit Evening News, the Cleveland Press, the Cincinnati Evening Post, the St. Louis Evening Chronicle, the Detroit Echo and the Detroit Sunday News, has been organized to send 40 American workmen to the Paris Exposition and to visit the industrial centers of Europe. In doing this the league has undertaken to pay all expenses of the expedition and of its members, both in this country and abroad, from the time the members leave their respective homes. The thoroughness with which the details of this extensive undertaking are being arranged is indicated by the following:

1. With a view to having actual workmen accompany the expedition the various labor organizations of the country have been invited to suggest the names of candidates to accompany the party. All leading trades will be represented.

2. The City of Rome has been chartered for the purpose of taking the expedition abroad, and the start will be from New York, on July 24, at 3 p. m. The route of the party is now being arranged, but its main features will include visits to Liverpool, Birmingham, Manchester, Sheffield, London and other great manufacturing points in England; Glasgow and the ship-building industries of the Clyde in Scotland; Rouen, Paris and the great lace and silk centers of France; Essen, Dusseldorf, Antwerp and other leading iron and industrial centers of Germany and Belgium. The central point, however, will be Paris and the facilities which the World's Exposition will afford for observation of mechanical arts in all branches.

3. The main purpose of the expedition will be to accumulate information concerning the advance of industrial art, from the standpoint of actual workmen. Each member chosen to accompany the party will therefore be especially selected for the knowledge he has of his trade, his capacity for observation and his ability to convey to others a fair idea of what he has seen abroad. So far as possible the actual notes and writings of the workmen accompanying the party will be utilized, but aside from this, the expedition will be accompanied by a staff of unusually competent and skilled correspondents, artists and photographers. The progress of the party and the results of observation will be sent to this country by means of an extensive cable service and correspondence now being arranged. The purpose is to ultimately place the whole in substantial book-form, in order that it may be of permanent value to the working masses.



## Hardware.

There is only a moderate activity in business, and transactions are limited for the most part to small assorted lots. The market does not show any change in tone, prices remaining in most lines at about the same level as heretofore.

### Wire Nails.

The conferences which we referred to in our last issue between the Western manufacturers of Wire Nails have resulted in the adoption of a new list for miscellaneous goods, which we print below, which meets the unanimous approval, we are advised, of the members of the Wire Nail Association. It will be seen that the prices given in the list are for 1, 5 and 10 pound packages, extras being added for  $\frac{1}{2}$ -pound and  $\frac{3}{4}$ -pound papers, and a deduction from the list for Nails in 25 or 50 pound boxes, or 100-pound kegs. This new list goes into effect July 15.

#### Miscellaneous Wire-Nail List.

Applying to all Nails except Standard Nails in kegs. Prices stated are for 1, 5 and 10 pound packages.

Length.	Gauge.	No.	Cts.	Length.	Gauge.	No.	Cts.
$\frac{1}{4}$ in.	19.....	60		$1\frac{1}{4}$ in.	13 to 4.....	20	
	20.....	80			14.....	22	
	21.....	90			15.....	23	
					16.....	24	
					17.....	25	
$\frac{3}{8}$ in.	18.....	45		$1\frac{1}{2}$ in.	12 to 4.....	19	
	19.....	50			13.....	20	
	20.....	60			14.....	22	
	21.....	70			15.....	23	
$\frac{1}{2}$ in.	18 to 14.....	40		2	11 to 3.....	18	
	19.....	45		and	12.....	19	
	20.....	50		$2\frac{1}{4}$	13.....	20	
$\frac{5}{8}$ in.	17 to 12.....	33		in.	14.....	22	
	18.....	35					
	19.....	40		$2\frac{1}{2}$	9 to 3.....	17	
	20.....	45		and	10.....	18	
$\frac{3}{4}$ in.	15 to 10.....	28		$2\frac{3}{4}$	11.....	18	
	16.....	30		in.	12.....	19	
	17.....	32			13.....	20	
	18.....	32		3	8 to 3.....	16	
	19.....	35		and	9.....	17	
$\frac{7}{8}$ in.	14 to 8.....	26		$3\frac{1}{4}$	10.....	18	
	15.....	27		in.	11.....	18	
	16.....	27			12.....	20	
	17.....	30		$3\frac{1}{2}$	8 to 3.....	16	
	18.....	30		and	9.....	17	
$1\frac{1}{4}$ in.	15 to 7.....	24		4	10.....	18	
and	16.....	26		in.	11.....	18	
$1\frac{1}{2}$ in.	17.....	27					
	18.....	28					
$1\frac{3}{4}$ in.	13 to 6.....	21					
	14.....	22					
	15.....	23					
	16.....	24					
	17.....	25					

#### Extras.—Add to List.

$\frac{1}{2}$ pound papers.....	2¢
$\frac{3}{4}$ pound papers.....	4¢
Oval, Cone or other Special Heads or Special Points, or for Barbing or Annealing.....	1¢
Nails combining several specialties add as above for each.	

Galvanized or Tinned Nails special prices.

#### Rebates.—Deduct from List.

Nails in 25 or 50 pound boxes or 100-pound kegs, bulk.....	1¢
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It would seem that the season, the general tone of the market and the uncertainty connected with the new card conspire to limit business in this line, most of

the manufacturers receiving comparatively few important orders. Transactions are restricted for the most part to small purchases, and several of the manufacturers are showing a disposition to name pretty close prices to the fair retail trade. There has been but little change in the market, and \$2.25 per keg may be named as the factory price for carload lots. Smaller parcels can be obtained at about \$2.35 to \$2.40.

### Cut Nails.

The market shows increasing firmness, and dealers who were selling at \$1.80 have advanced their quotations to \$1.85, with only broken assortments to ship from and a decided scarcity in standard sizes. The ruling price for the past week has been \$1.90, which has been obtained by most dealers without difficulty. Small lots sell up to \$2. It now appears likely that the market will remain steady at about \$1.90 for good-sized lots, as Western Nails can be had in sufficient quantity to allay all apprehension of a deficiency. At the same time the demand is sufficiently strong to sustain prices, notwithstanding the fact that dullness usually prevails at this time of the year. Inquiries are numerous, and all indications point to much greater activity before the month closes.

### Miscellaneous Prices.

A change has been made in the price of Common Carriage-Bolts and also in the rebates allowed on quantity purchases. The discount on the goods has been made 75 and  $7\frac{1}{2}$  per cent., 60 days, subject to an additional discount of 2 per cent. for cash in ten days, instead of the former price, 75 and 10 and 2 per cent. The following rebates were determined upon in place of those which were before in operation, on purchases during six months, beginning July 1 and terminating December 31, 1889.

On purchases \$250 net a rebate of  $2\frac{1}{2}$  per cent.  
On purchases \$500 net a rebate of 5 per cent.  
On purchases \$1000 net a rebate of 10 per cent.

These rebates will be paid by the commissioner and not by the manufacturers direct from whom the goods are purchased. This arrangement, it is thought, will work advantageously and is made with a view to meeting the wishes of the large trade, for whose advantage the larger rebate for \$1000 purchases has been established.

The following are the list-prices of the Never Break Steel Griddles, manufactured by the Bronson Supply Company, Cleve-

Size inch	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2
Steel Elbows.....	4	8	12	18	28	40	52	88	
Steel Tees.....	7	15	25	36	48	65	80	1.35	
Steel Unions.....	24	24	29	33	44	60	84	1.08	1.44
Steel Nuts and Swivels.....	15	17	19	21	30	40	56	72	95
Plugs.....	2	2	2	3	4	5	7	9	13
Bushings.....	3	3	4	5	6	8	11	18	
Couplings.....							37		
Return Bends, $2\frac{1}{2}$ C. to C.....							1.10		
Return Bends, 4 C. to C.....							1.55		
Nipples, Right Hand.....	4	4	5	6	8	9	12	14	21
Nipples, over $3\frac{1}{2}$ inches in length, Right Hand.....	6	6	8	9	10	13	17	21	29
Nipples, Right and Left.....	9	9	10	13	15	20	25	33	
Nipples, over $3\frac{1}{2}$ inches in length, Right and Left.....	10	12	14	17	20	29	38	50	

These, or any other designs or sizes, furnished with Right or Left Threads, as desired.

land, Ohio, the list being subject to a discount of 50 per cent.:

No.	Diameter across top.	Each.
8.....	$8\frac{1}{4}$ inches.	\$0.60
9.....	$9\frac{1}{4}$ "	.70
10.....	$10\frac{1}{4}$ "	.80

Other sizes will soon be added, and it is also announced that a full line of Never Break Wrought-Steel Pots and Kettles will be on the market for fall business.

At a recent meeting of the Common Wrench manufacturers prices were slightly advanced, and a general quotation on these goods is 75, 10 and 5 per cent., instead of 80 per cent. as heretofore.

The Chain market is rather weak, and slightly lower quotations are made on Trace and fancy Chains. Coil Chains are also a shade lower.

In the market for Iron Planes there is a tendency toward somewhat lower quotations, competition being very animated, and with the number of manufacturers in the market the margin on goods is pretty well reduced. It is also noticeable that this line of goods is coming into increased use and they are to a considerable extent superseding the wooden. There is a great deal of irregularity in the prices of the different makers, those of established reputation receiving 40 to 50 per cent. more for the goods than those whose position is not so assured.

There has been a further decline in the price of Copper Rivets and Burrs, and recent sales are at lower figures than have been made since the formation of the Copper syndicate.

The animated competition which has for some time existed in Boxwood Rules has resulted in somewhat larger discounts, and the goods can now be purchased from some of the manufacturers at concessions from former prices. There is also in this line some disparity in the quotations made by different manufacturers, but it is conceded by nearly all that margins are exceedingly narrow.

Nuts and Washers appear to be somewhat unsettled in price, and manufacturers are solicitous of securing orders and are offering slight inducements.

A similar condition of things exists in Machine Bolts, and at the present time somewhat lower quotations are being made than have been ruling during the past six months.

Manila Rope is extremely weak in price, and there have been some transactions at prices lower than those that have prevailed thus far this year. Eastern competition and the use of New Zealand Hemp have their effect in inducing this condition of things. Sisal Hemp is extremely scarce and as a consequence the Rope is very firm in price.

Stanley G. Flagg & Co., North Nineteenth street, corner Pennsylvania avenue, Philadelphia, Pa., issue a circular relating to their Steel Pipe-Fittings, which are referred to as made of a superior quality of metal, being homogeneous and free from sand or pin-holes. They are from the following list, which is subject to a discount of 70 per cent.:

	Dis	Per cent.
Malleable-Iron Unions (Keystone).....	55	
Malleable-Iron Unions (American).....	55	
Steel Pipe-Fittings.....	70	
Cast-Iron Fittings (Flanges).....	70&10	
Malleable-Iron Fittings.....	40	
Cast-Iron Fittings.....	75&10	
Unions, Malleable-Iron.....	70	
Bushings.....	80	

Plugs.....	80
Plugs, Solid.....	80
Plugs, Countersunk.....	80
Manifolds.....	70&10
Coil-Stands.....	70&10
Hook-Plates.....	70&10
Expansion Hanger.....	70&10
Pipe-Supports.....	70
Couplings, Wrought.....	70&10
Nipples, Wrought.....	70
Long Screws, Wrought.....	25
Plumber Hooks.....	per 100 70¢
Rod-Couplings.....	per pound, 12¢ black, 15¢ galv.
Drive-Well Caps and Sockets, per pound, 10¢ black, 13¢ galv.	
Tinned Straps.....	per pound 11¢
Cock and Meter Wrenches.....	per pound 5¢
Wash Pave Keys.....	per pound 7¢
Gas-Keys.....	per pound 6¢
Hydrant Handles and Stays.....	per pound 7¢
Hydrant Rod Clamps.....	per pound 7¢
Gas-Meter Floor-Plates.....	per pound 7¢
Checks and Guides.....	per gross \$5.50
Foot-Valves.....	special net list.
Strainers.....	special net list.

### Syndicate Buying.

With reference to this matter, which was referred to at some length in a recent issue, we have the following communication from a well-known manufacturer:

The article and comments on syndicate buying in your issue of June 27 are interesting reading, and will be still more so to the jobbers, who thought they were taking a "cross-cut" on their competitors and manufacturers when the syndicate buyers for retailers got in their work. If jobbers knew how many goods have been bought for retailers by parties who have used jobbers' orders to get the prices, they would not be quite so content to have their prices made common property.

Most manufacturers, as a matter of both fairness and policy, try to protect their customers. Of course their main object is to sell their goods, but over and above all they are deeply interested in keeping the market in a healthy condition. That syndicate buying will lead only to demoralization seems clear and what jobbers mean by resorting to it we cannot see. And the retailers will find that they have no more to gain by it than the jobbers are now gaining by it. Your correspondent asks what will be the outcome? We do not venture an answer but we observe that some manufacturers have learned that in quoting prices it is best to say whether or not the prices named are subject to a commission, and if so how much commission.

The syndicate buyers got some advantage at the start, but to-day the independent buyer gets as good prices as those in the syndicate, and possibly sometimes a little better, as manufacturers can be sure of their ground when quoting. It will be a sad day for legitimate dealers when the basis of business is an "underground" line of communication for giving away prices. We think that the trade will find that it is best for "every tub to stand on its bottom," but if some shall have little bottom to stand on syndicate buying can be "thanked" for it.

JUSTICE.

### Items.

The Bridgeport Chain Company, Bridgeport, Conn., have put on the market a line of Triumph Kennel Chains. These Chains have a center swivel and a swivel snap at each end. They are made of the company's well-known wire Chain, and are referred to as very strong, light and not liable to kink or snarl up.

H. P. King has been appointed manager of the Tacoma Hardware Company, Tacoma, Wash. Ter., in place of H. P. Hoagland, resigned. Mr. King is referred to as an active Hardware man of extensive experience, having formerly been connected with the Black Hardware Company, Detroit, Mich., and as qualified to fill the position efficiently.

We are advised that Ketchum's Flush Sash-Lift, an inquiry for which appeared in our last issue, is made by Landon Ketchum, South Norwalk, Conn.

In their advertisement on page 66 Farnsworth & Co., 109 California street, San Francisco, Cal., for whom John H.

Graham & Co. are agents, 113 Chambers street, New York, illustrate the Improved Eureka Fruit-Pitter, a machine of which we recently gave a description. The illustrations indicate the construction and operation of the Pitter.

Pomeroy & Jackson, Lockport, N. Y., issue a pamphlet describing the Botsford Wagon Spring and pointing out its special features. This Spring is made regularly in seven sizes, with a capacity ranging from 800 to 8000 pounds. Their pamphlet gives a number of testimonials from parties who have used the Springs and who commend them. An advertisement relating to these goods and illustrating the Spring will be found on page 57.

Yawman & Erbe, Rochester, N. Y., in their illustrated circular explain the special features of their Elevator Floor Stop and Lock with some excellent cuts that illustrate clearly its operation. The utility of this device, which has been quite generally tested, is also referred to and an additional list of firms using it is given.

The Hercules Powder Company, Cleveland, Ohio, in their catalogue for the present year make an interesting exhibit of the Hercules Powder, with full directions for its use and illustrations. Its safety, strength, efficiency, economy and its freedom from noxious fumes are the points which are emphasized in regard to it. Magneto Batteries and Blasting-Reels are also illustrated.

Under date 20th ult. E. C. Meacham Arms Company, St. Louis, Mo., issue a price-current devoted to Arms, Ammunition, &c., in which their usual interesting line is exhibited.

Chas. Heaton, who is well known in the Emery-Wheel trade, has given up the manufacture of his Bed Rock Emery-Wheels at Gloucester, Mass., and has removed to Philadelphia and is now in the employ of the Philadelphia Emery Wheel Company, with whom he has made an arrangement for making Wheels for his customers.

The trade will observe on page 70 the advertisement of the John M. Waddell Mfg. Company, Greenfield, Ohio, in which they illustrate their line of box Coffee-Mills, in which some new features will be observed. They report an increasing demand for these goods, and advise us that they are running their factory to its full capacity in supplying orders.

Announcement is made that the wholesale Hardware business heretofore conducted under the firm-name of Cavanagh, Barney & Co., Mobile, Ala., will be continued under the firm-name of Barney, Cavanagh & Long. The former partnership terminated June 1, John Cavanagh having died.

A page of exceptional interest is that in which the American Screw Company, Providence, R. I., illustrate the progress that has been made in Screw-making during the past 50 years, representations being given of successive patterns of Screws, culminating in the rolled or swaged Screw, which is made under the patents of H. A. Harvey and Charles D. Rogers. This Screw, of which we had already given a description and also illustrated in some detail the ingenious machinery by which it is manufactured, has been for the past year on the market in an experimental way, the company taking pains to put it in the hands of mechanics in whose use it would be severely tested, while at the same time they have been putting into their factory the new machinery required for its manufacture. The result of these tests is, we are advised, exceedingly satisfactory, and the chief points of advantage in the new Screw are specified in the company's advertisement, page 11. The quality of the material is also there shown in the

cuts, which represent the Screws distorted without breaking by cold hammering. The trade will understand that the putting in of a complete line of machinery for the manufacture of a full assortment of Screws is a very large enterprise, and the company are not yet prepared to take orders for all sizes. They are, however, they advise us, in a position to fill orders for the following sizes in sample lots for the purpose of introducing them to consumers, other sizes being constantly added:

### Sizes in Stock July 1, 1889.

- 1, 11.
- 1½, 10, 11.
- 1½, 10, 11, 12, 13, 14, 16.
- 1½, 12, 14, 16.
- 2, 12, 14, 16, 18.
- 2½, 14, 16, 20.
- 3, 18, 20.

Still further improvements by the rolling or swaging process are promised by this company in Screw-Nails, Drive-Screws, Coach-Screws, Horseshoe Nails and kindred articles.

The Diamond Wrench and Tool Company, Portland, Maine, besides the tools shown in their catalogue, January, 1889, are making a full line of Plane and Ratchet Braces, Box and Cotton Hooks, Ice and Scratch Awls, Ice-Picks, Tack-Claws and Can-Openers. They are getting up a 40-page catalogue which they expect to issue about August 1.

The Seattle Post-Intelligencer, July 1, has the following interesting announcement in regard to an important business enterprise in that city:

Arrangements have been completed by which Seattle will possess after January, 1, 1890, one of the largest and most complete Hardware establishments on the Pacific coast. The movers in this enterprise are the stockholders in the Seattle Hardware Company, of this city; Messrs. C. A. Black, F. B. Black and C. H. Black, of the Black Hardware Company, of Detroit, and Mr. John L. Simpson, of Seattle. The preliminaries essential to the union of these extensive interests have practically been completed, and only the impossibility of securing a suitable business location prevents the new company from entering into business at once. The paid-up capital of the company will be \$150,000. The intention of the projectors of this enterprise is to carry a full line of Hardware of all kinds, together with a line of Stoves. The stock will be more complete and will more fully cover the Hardware trade than any other on the North Pacific Coast. Every branch of the Hardware trade will be provided for, including Heavy and Shelf Hardware, Tinners' Tools and Supplies, Fishermen's Supplies, Tools of all kinds, Fire-Arms and Hunters' Supplies and fine Plated-Ware. Indeed, the members of the new firm hope to make Seattle the distributing-point of the entire territory for everything in the Hardware line.

The principal efforts of the firm will be extended to secure the jobbing trade, but the retail trade will not be neglected. Two store-rooms on the corner of Front and Marion streets, the most northerly two rooms in the new Colman Building, have been secured for this branch of the business, and they will be fitted up in a manner which will be a credit to Seattle. An extensive building for the use of the firm will be erected by Mr. Colman directly in the rear of his Front-street building, and here the reserve stock will be stored. It is the intention to carry a larger stock of goods than has heretofore been carried by any Seattle firm. This important addition to the business organization of Seattle is peculiarly fortunate at this crisis in the history of the city, and the announcement that such an important institution is soon to be located here will doubtless be received with gratification as a sure indication that Seattle is to be in the future, as it has been in the past, the trade center of Western Wash. Ter.

From R. Loveland Axe Company, Lamar, Pa., whose works were destroyed in the recent floods, we have the following letter, which refers not only to their enterprise in rebuilding, &c., but also gives information in regard to the damage done in their valley, which in the presence of the greater destruction done in other sections has not been generally appreciated:

We are hard at work with a large force repairing our shops and rebuilding dams.









## Paints and Colors.

The market for Paints and Colors of nearly all descriptions has been rather slow. Manufacturers of Leads, Zincs, Paris Green and other Colors adapted for the jobbing trade report merely a fair distribution, and in ready-mixed Paints the transactions have not been quite as liberal as during the preceding week. Colors for grinders and bulky goods in general have also been rather dull. The assignee of a Boston firm that recently made a settlement of 20¢ on the dollar is doing considerable mischief by slaughtering goods right and left, and competitors who have sufficient business capacity to keep their affairs in proper shape necessarily suffer in common with the firm's unfortunate creditors. Apart from this there is no unfavorable feature, and, generally speaking, values show remarkable steadiness for so slow a market.

**White Lead.**—Although remarkably good for this season of the year business is showing little spirit, and remarks made by jobbers indicate that purchases will be governed wholly by urgent wants until the position of the trust as to prices, rebates, &c., is clearly defined. For the present the late association figures and terms are maintained, not only by trust concerns, but by outsiders. The Atlantic White Lead Company, it can now be stated on the authority of Messrs. Colgate, is in the National Lead Trust. The terms of the bargain are not made public, but understood to be even more liberal than those under which the Collier and the Southern companies were taken in. It is understood that Mr. Samuel Colgate, of the Atlantic Company, has been slated for the trusteeship of the trust, that Mr. F. W. Rockwell, of the Southern White Lead Company, will be secretary or general manager, and that the Board of Trustees will be made up largely of the most experienced manufacturers, the Standard Oil interest being in a minority.

**Zinc.**—American Oxide Zinc continues to meet with steady sale, and supplies are so closely taken up that former prices are maintained without the slightest difficulty on all grades. Foreign Zincs are strong at the advance quoted last week and continue to meet with very fair sale, principally in jobbing quantities.

**Colors.**—There have been no important developments in the market for any line of colors. In a general way the demand may be called seasonably fair, although exceptions could be pointed out, and the variations in prices have been unimportant. The association's rates for Paris Green are adhered to, as are also the combination figures for Red Lead and Litharge. There is some little variation, however, on Venetian Red, Umber and Ocher. Vermilion remains quite firm, as does also Carmine. Marseilles Green is unsettled by forced sales made by the assignee of Henry Wood & Son, of Boston, the firm that recently made a settlement of 20 cents on the dollar. Whether the assignee is going further than to work up the material on hand or not is uncertain, but that he is making matters very unpleasant for manufacturers who have successfully managed their business cannot be questioned. Having an advantage of 80 per cent. over solvent competitors, the seller referred to has cut prices to 10½¢ for 25-lb lots, 10¼¢ for 10-lb lots and 11¼¢ for assorted sizes to large jobbers, and has also sold to small jobbers at ½¢ off those prices. The regular prices were 12¢ for 25-lb lots and 13¼¢ for assorted sizes.

**Miscellaneous.**—Block Chalk in bulk continues dull, and \$2.50 seems to be about all that round lots will bring. Whiting is still somewhat irregular in value and moving rather slowly. There is about the average movement of Paris White, Terra Alba, Talc and China Clay at about previous prices.

The competition in Metallic Paints continues sharp, and \$14 @ \$14.50 are apparently extreme prices. The effort to crowd Price out seems to be a very determined one.

The quarterly statement of the Bureau of Statistics reveals a considerable decrease in the exports of Cotton-Seed Oil during the three months ending March 31. Thus only 841,335 gallons are recorded for the first quarter of 1889, against 1,467,218 gallons for the corresponding period last year. The exports of Lard Oil for the same period show an increase of 86,923 gallons.

The Linseed of the Central Provinces and the Bombay Presidency is known to be short this year. Since February 15, when the new Linseed crop began to come in, the receipts into Bombay are 20,000 tons short of last year.

The stock of Crude Whale Oil in New Bedford July 1 was 4950 barrels, against 4480 barrels at the corresponding date last year. The stock of Crude Sperm Oil there was 14,860 barrels, against 17,760 barrels a year ago.

The following is a list of the manufacturing establishments controlled by the National Lead Trust:

**New York City.**—Atlantic White Lead Co., Bradley White Lead Co., Brooklyn White Lead Co., Jewett White Lead Co., Ulster White Lead Co., Union White Lead Co.  
**Buffalo, N. Y.**—Cornell White Lead Co.  
**St. Louis, Mo.**—Southern White Lead Co., Collier White Lead Co., St. Louis White Lead Co.  
**Chicago, Ill.**—Southern White Lead Co., D. B. Shipman White Lead Works.  
**Pittsburgh, Pa.**—Beymer-Bauman & Co., Pennsylvania White Lead Co., B. L. Fahnestock White Lead Co.  
**Philadelphia, Pa.**—John T. Lewis Bros. & Co., Western White Lead Co.  
**Cincinnati, Ohio.**—Eckstein White Lead Co., Anchor White Lead Co.  
**Louisville, Ky.**—American White Lead Co., Kentucky White Lead Co.  
**Cleveland, Ohio.**—J. H. Marley White Lead Co.  
**Salem, Mass.**—Salem Lead Co.

The Bradford district is still making about 20,000 barrels of Crude Petroleum a day, and many new wells are being drilled.

Ground was recently broken at Wolfe City, Texas, for a \$45,000 Cotton-Seed Oil mill, and work is shortly to be commenced on a \$100,000 Cotton and Woolen mill.

The American Cotton-Seed Oil Company, of New Jersey, have purchased ten of the Cotton-Oil mills in Texas, and amendments to the several charters have been filed in the office of the Secretary of State terminating and dissolving the corporations. The American Cotton-Seed Oil Company in filing their amendment, however, it appears, is going to have some trouble, as under the law of Texas a corporation once in existence cannot dissolve or terminate its existence except by limitation as expressed in its charter or by decree of court of competent jurisdiction. Attorney-General Hogg has expressed the opinion that the amendments filed are worthless, and hence, if the mills are operated by the New Jersey company, it must be done under their original charters and franchises, and as separate and distinct companies.

## Wholesale Prices.

NEW YORK, July 10, 1889.

## Animal and Vegetable Oils.

Linseed, City, raw.....per gal	60	60	..
" " " " " " " "	63	63	..
" " " " " " " "	58	58	50
Lard, City, Extra Winter.....	58	58	00
" " " " " " " "	54	54	55
" " " " " " " "	47	47	50
" " " " " " " "	42	42	44
" " " " " " " "	53	53	54
Cotton-seed, Crude, prime.....	38	38	30
" " " " " " " "	33	33	36
" " " " " " " "	18	18	49
" " " " " " " "	43	43	47
" " " " " " " "	65	65	07
Sperm, Crude.....	68	68	70
" " " " " " " "	73	73	75
" " " " " " " "	75	75	77
" " " " " " " "	80	80	82
Whale, Crude.....	40	40	40
" " " " " " " "	40	40	40
" " " " " " " "	48	48	48
" " " " " " " "	49	49	50
Sea Elephant, Bleached Winter.....	54	54	55
Menhaden, Crude, Sound.....	22	22	24
" " " " " " " "	22	22	23
" " " " " " " "	30	30	32
" " " " " " " "	35	35	36
" " " " " " " "	38	38	39
" " " " " " " "	40	40	40
Tallow, City, prime.....	50	50	50
" " " " " " " "	40	40	40
Cocanut, Ceylon.....	54	54	54
Cod, Domestic.....	33	33	34
" " " " " " " "	34	34	35
Red Elaine.....	36	36	38
Red Saponified.....	44	44	54
Bank.....	27	27	..
Straits.....	28	28	..
Olive, Italian, bbl.....	64	64	00
Neatsfoot, prime.....	62	62	75
Palm, prime, Lagos.....	54	54	..

## Mineral Oils.

Black, 29 gravity, 25 @ 30 cold test, per gal	8	8	9
" " " " " " " "	15	15	15
" " " " " " " "	0	0	7
Cylinder, light, filtered.....	15	15	20
" " " " " " " "	14	14	20
" " " " " " " "	10	10	18
Paraffine, 23½ @ 24 gravity.....	11	11	12
" " " " " " " "	10	10	11
" " " " " " " "	8½	8½	9
" " " " " " " "	14	14	14½
" " " " " " " "	12	12	13

## Paints and Colors.

Barytes, Prime White.....	20	20	..
" " " " " " " "	12	12	14
" " " " " " " "	19	19	21
Blue, Celestial.....	5½	5½	7½
" " " " " " " "	45	45	50
" " " " " " " "	20	20	35
" " " " " " " "	7	7	25
Brown, Spanish.....	3	3	1
" " " " " " " "	0	0	3½
Black, American Drop.....	8	8	10
" " " " " " " "	12	12	14
" " " " " " " "	5	5	18
Black, Lamp, common.....	12	12	18
" " " " " " " "	19	19	25
" " " " " " " "	27	27	33
Carmine, No. 10, in bulk.....	3.10	3.10	..
" " " " " " " "	3.20	3.20	..
" " " " " " " "	4.20	4.20	..
Chalk, in bulk.....	2.50	2.50	3.75
China Clay, English.....	13.50	13.50	18
" " " " " " " "	10.00	10.00	11.50
Cobalt Oxide, prep'd.....	2.90	2.90	..
" " " " " " " "	2.60	2.60	..
" " " " " " " "	2.65	2.65	..
Crocus Martius, English.....	1½	1½	2½
" " " " " " " "	1½	1½	2½
Green, Paris, in bulk.....	20	20	..
" " " " " " " "	20½	20½	..
" " " " " " " "	22	22	26½
" " " " " " " "	8	8	11
" " " " " " " "	12	12	13
" " " " " " " "	22	22	25

REBATES, &c.—Paris Green.—Rebates to buyers of 500 to 1000 lb during season, ½¢ per lb; to buyers of 1000 to 2000 lb, 1¢; to buyers of 2000 to 4000 lb, 1½¢; to buyers of 4000 to 10,000 lb, 2¢; to buyers of 10,000 lb and over 2½¢. Buyers of 5 tons or over at one time receive an additional ¼¢ per lb.

Lead, American White, dry..... 6½¢ @ 7  
" " " " " " " " 7¢ @ 7½  
" " " " " " " " 6½¢ @ 7  
Litharge, in barrels..... 7¢ @ 7  
" " " " " " " " 7¢ @ 7  
" " " " " " " " 7½¢ @ 7½

REBATES, &c.—White Lead. ½¢ per lb rebate on purchases of 500 lb and over, if paid for within 60 days of date of invoice; terms, 60 days or a discount of 2½¢ if payment within 15 days from date of invoice. Extra rebate of ½¢ per lb, payable July 1 and December 31 to buyers of a total of 10 tons pure Lead during the year.

Litharge.—Rebate of ½¢ per lb for cash in 60 days and 2½¢ additional for cash in 15 days.

Ocher, Rochelle.....	1½	1½	1½
" " " " " " " "	1½	1½	1½
" " " " " " " "	1½	1½	1½
Orange Mineral, English.....	8½	8½	9½
" " " " " " " "	9	9	10
" " " " " " " "	8½	8½	9½
" " " " " " " "	8	8	8½
Paris White, English Cliffstone.....	1.00	1.00	1.10
" " " " " " " "	70	70	85
Red, Indian, English.....	5½	5½	6
" " " " " " " "	2	2	6
" " " " " " " "	9	9	14
" " " " " " " "	9	9	11
" " " " " " " "	90	90	1.25
Sienna, Italian, Burnt and Powd. # 1.....	1.00	1.00	1.47½
" " " " " " " "	5	5	6½
" " " " " " " "	1½	1½	3½
" " " " " " " "	5	5	6½
" " " " " " " "	2	2	3½
" " " " " " " "	1½	1½	1½
" " " " " " " "	1½	1½	1½
Talc, French.....	1	1	1½
Terra Alba, French.....	75	75	80
" " " " " " " "	80	80	85
" " " " " " " "	70	70	75
" " " " " " " "	38	38	40
Umber, Turkey, Bnt. and Powd. # 1.....	3½	3½	4
" " " " " " " "	3½	3½	4
" " " " " " " "	3½	3½	4
" " " " " " " "	2½	2½	2½
" " " " " " " "	1½	1½	1½
" " " " " " " "	1½	1½	1½
Yellow, Chrome.....	10	10	25
Vermilion, American, Lead.....	11½	11½	13
" " " " " " " "	60	60	65
" " " " " " " "	82	82	85
" " " " " " " "	8	8	25
" " " " " " " "	75	75	77
" " " " " " " "	88	88	90
Whiting, Common.....	42½	42½	47½
" " " " " " " "	55	55	60

Zinc, American, dry..... 44¢ @ 44½  
" " " " " " " " 6½¢ @ 6½  
" " " " " " " " 7½¢ @ 7½  
" " " " " " " " 6¢ @ 6  
" " " " " " " " 6½¢ @ 6½  
" " " " " " " " 7¢ @ 7  
" " " " " " " " 5½¢ @ 5½  
" " " " " " " " 98¢ @ 10½¢  
lots less than 1 ton..... 95¢ @ 109¢  
Zinc, V. M. in Poppy Oil, Red Seal, lots of 1 ton and over..... 85¢ @ 9  
lots of less than 1 ton..... 89¢ @ 9½

DISCOUNTS.—French Zinc.—Discounts to buyers of 10-bbl. lots of one or assorted grades, 1¢; 25-bbls, 2½¢; 50-bbls, 4¢. No discount allowed on less than bbl. lots.

## Colors in Oil.

Blue, Chinese.....	35	35	40
" " " " " " " "	20	20	45
" " " " " " " "	12	12	18
Brown, Vandyke.....	7	7	12
Green, Chrome.....	8	8	13
" " " " " " " "	10	10	18½
Sienna, Raw.....	7	7	13
" " " " " " " "	7	7	13
Umber, Raw.....	7	7	10
" " " " " " " "	7	7	10

## Glue.

Low Grade.....	8	8	10
Cabinet.....	12	12	15
Medium White.....	12	12	15
Extra.....	17	17	20
French.....	9	9	20
English.....	10	10	15
Irish.....	12	12	15

### Corrugated Elevator Bucket.

Our readers are already acquainted with the elevator buckets made by the Avery Stamping Company, of Cleveland, Ohio, successors to the Avery Elevator Bucket Company, of the same city. This company have lately purchased of W. H. Caldwell, of Chicago, his patents for corrugated elevator buckets and other sheet-metal goods. Mr. Caldwell's improve-

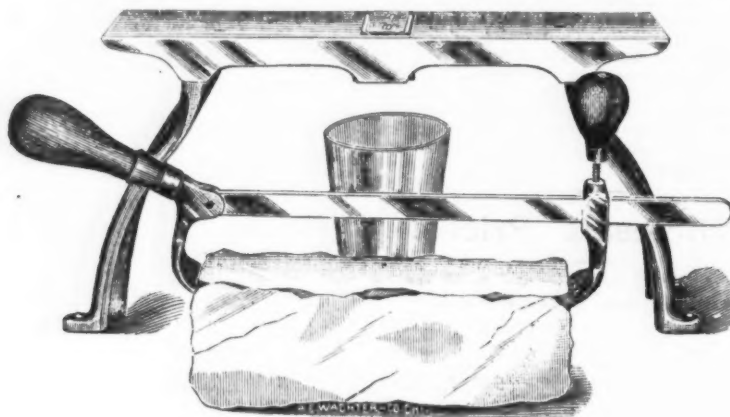


Avery Corrugated Elevator Bucket.

ments relate to means by which any article of sheet-metal may be made stiff and rigid, thereby doing away with cross-braces that are found in old-style elevator buckets and which interfere with the filling and emptying. The improvement as applied to an elevator bucket is indicated in the accompanying engraving. The corrugation proves of great benefit, for the reason that ear corn, slag or any rough or ragged material can be dipped up easily with less friction of a full load. There are no braces to catch or seams to give way that cause spilling the material down the back leg, something which all elevator men have experienced. Buckets of this description are considerably lighter than the common ones in use and at the same time are stronger.

### Walker's Double-Cutter Ice-Shave and Adjustable Ice-Grip.

The accompanying illustration represents this article, which is manufactured by the Erie Specialty Mfg. Company, Erie, Pa., and also indicates in a general way its construction and use. It will be seen that it represents the ice-shave in position for use, the ice-grip laying hold of the piece of ice to be shaved, and a



Walker's Ice-Shave and Adjustable Ice-Grip.

tumbler under the shave to receive the ice when shaved. The ice-shave is provided, it will be observed, with two cutting-knives, which are fastened from the top, making it convenient to adjust, and operating twice as fast as a single cutter, inasmuch as it operates in whichever direction the ice is drawn over the knives. The length of the flat surface of this shave is 14½ inches and its width nearly 4 inches, the knives being 2½ inches long. The ice-grip is an ingenious contrivance for holding the ice in the process of shaving it, and will by means of its adjustment hold a piece of ice ranging from the

smallest size up to 12 inches in length. As indicated in the illustration, the movable handle is fastened wherever desired by means of the screw. The handles are made of enameled wood, and it is pointed out that the use of this grip avoids chilling or cutting the hands, a serious objection to using the ice in the bare hands. Both the ice-grip and ice-shave are handsomely nickel-plated and make an attractive addition to the counter. The advantage of having shaved ice for sodas, milk shakes, &c., is also referred to. When it is necessary to sharpen the knives they can easily be removed.

### The Boss Fire-Pot and Paint-Burner.

Clayton, Lambert & Co., of Ypsilanti, Mich., are directing the attention of the trade to the Boss fire-pot, for which many strong claims are made. In Fig. 1 of the accompanying illustrations we show a view of the Boss with the hood removed. The manufacturers state that this device is a per-



The Boss Fire-Pot.—Fig. 1.—General View of Pot with Hood Removed.

fect blast-furnace; will heat the largest irons quickly and cheaply, and will work out-of-doors as well as inside a building. The burner, it is said, does not become clogged or eaten out by drippings from the irons, owing to the fact that it is placed outside the pot. The construction is such that the device heats the irons from heel to point, thus avoiding a cause of common complaint—burning the tinning off the irons. The tank has such a capacity that one filling will last ten hours. With the hood removed the Boss may be used as a plumber's torch for

for convenience. This device is said to be under perfect control of the operator, performs its work very rapidly, and can be used on oil finish as well as on the heaviest

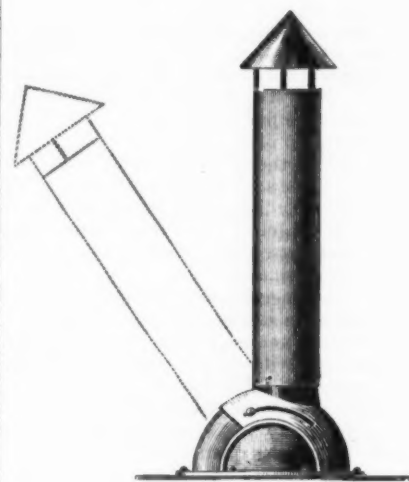


Fig. 2.—The Boss Paint-Burner.

body paint. The manufacturers state that it may also be used as a torch for lighting street lamps and coal or woodfires.

### Adjustable Chimney.

The Marion Stove Company, of Marion, Ind., are offering the trade an adjustable chimney, which they are manufacturing under Jones and Elser's patent, granted February 14, 1888. The chimney is made of cast-iron, and is so constructed that without the use of solder it is water-tight and requires no repairing when once placed in position. It can be employed as a hood by placing it upon the chimney,



Adjustable Chimney.

bending the sides and ends of the galvanized iron down over the chimney and turning the corners with a hammer or mallet. The company state that if the bottom plate is made of galvanized iron it will work equally well in connection with iron or shingle roofs. When put on so that the opening in the cap registers with the hole in the roof there is a space of 4 inches between the pipe and sheeting at all points, rendering the device perfectly safe. It is claimed that this adjustable chimney will fit any roof, from perfectly flat to one-half pitch, and the pipe will stand perpendicular. By reference to the engraving presented in connection herewith the reader will be able to gather an idea of the general construction of this device. It is simple of construction and possesses features which cannot fail to command attention.

The General Term of the Kings County Supreme Court has rendered a decision which is of interest to all savings-bank depositors. Christian Kümmell had \$450 on deposit with the Germania Savings Bank, and the bank paid it out to a man who stole his pass-book. The institution refused to pay Kümmell and he sued, obtaining judgment, which has been affirmed on appeal.



### Little Gem Pipe-Wrench Attachment.

The accompanying illustration, Fig. 1, represents this simple article, Fig. 2 showing how it is used in connection with



Fig. 1.—Little Gem Pipe-Wrench Attachment.

an ordinary wrench. It is the invention of A. A. Hutchins, Clyde, Ohio, for whom E. M. Richardson is New England agent, Waltham, Mass. The attachment consists of a piece of steel about  $\frac{1}{4}$  inch long and  $\frac{1}{8}$  inch in diameter, toothed all around, as shown in the cut, and attached by means of a brass wire, on which it revolves, to the rubber band, by means of which it is connected with the wrench in the position shown in the cut. It is claimed that in use the attachment converts an ordinary wrench into an excellent pipe-wrench, and in order to secure its efficiency of operation it is suggested that the attach-

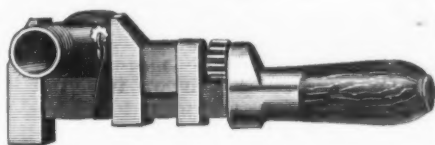
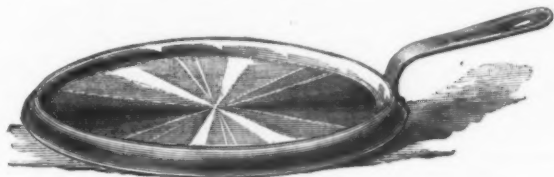


Fig. 2.—Attachment in Use.

ment be adjusted above the center of the pipe, thus enabling it to get a good grip. It is intended for farmers, mechanics or other persons who do not use a pipe-wrench enough to justify the purchase of one, and also for plumbers and others to carry in the pocket for an emergency. It is sent by mail for 30 cents, the price per dozen being \$2.05.

### A New Steel Griddle.

The Bronson Supply Company, of Cleveland, Ohio, have just brought out a new cake-griddle which they are offering the trade under the name of Never Break. This griddle, a general view of which is presented in the accompanying cut, is made of cold-rolled wrought-steel, finely polished and carefully finished. The claim is made by the manufacturers that these griddles will not absorb grease, cannot crack and will not scale or warp. The shape is of the most approved form and a perfectly clean surface is presented. Several sizes are made, ranging in diameter across the top from  $7\frac{1}{4}$  inches up to 13 $\frac{1}{4}$  inches. The same concern will make a full line of wrought-steel pots and kettles



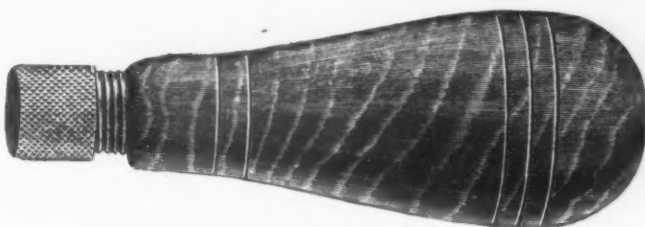
The Never Break Steel Griddle.

for the fall trade, and these will be offered under the same name as that above given. The demand for their steel spider is very large and they report that up to within a few days they have been behind with

their orders. They are turning out from 1500 to 3000 of these spiders per day and state that the outlook is very promising.

### Humphrey's Brad-Awl Handle.

This brad-awl handle is manufactured by the Humphrey Tool Company, Warren, Mass., and is intended for use by workmen desiring a cheap handle for the old-fashioned or forged shank brad-awls. It is made of hard wood polished, with double metal ferrules at the end. The inner ferrule has an oblong hole or slot

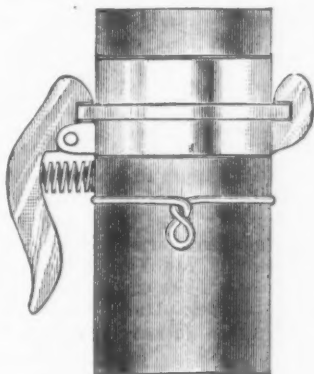


Humphrey's Brad-Awl Handle.

squared at the ends to keep the awl from turning when the shank is inserted therein. It is threaded on the outer surface, and on it the outer ferrule is screwed, which has in the center of the top a round hole of such size that it is adapted to many sizes of awls. The awl is placed in the handle and the outer ferrule, which is knurled, as shown in the cut, is screwed tightly over it, holding the awl firmly and centrally. Its adaptation to large or small awls is one of the points in regard to it emphasized by the manufacturers.

### The Smith Hose-Coupling.

This device is designed particularly to quicken and to secure a tight joint in garden or other hose and to avoid the incon-



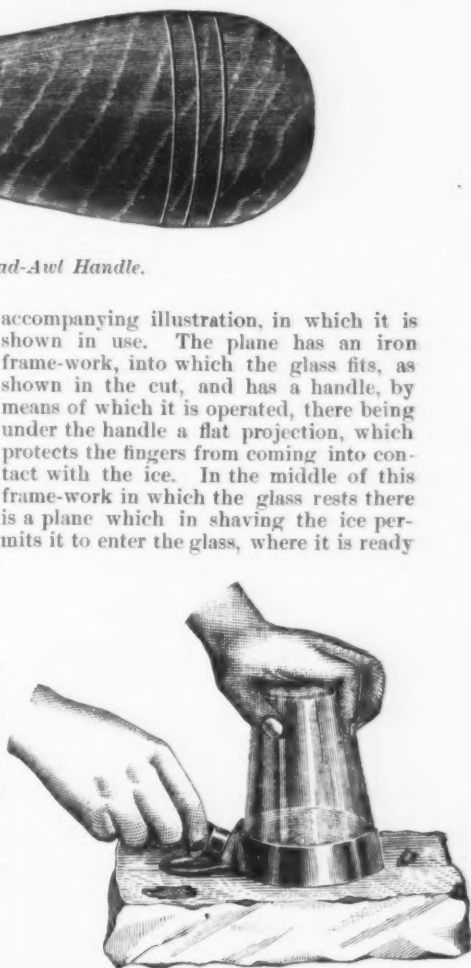
The Smith Hose-Coupling.

veniences caused by leaking joints, loss of time, &c. To make the joint it is only necessary to screw the ring on to the usual place of attachment until the washer is

provided with a rubber gasket, for sprinkling it is only necessary to engage the stiff hook under the flange of the ring and draw straight across until the spring hook catches. The attachment will fall apart when unhooked. This attachment is made by C. L. Smith, of Cleveland, Ohio.

### Walker's Handy Ice-Plane.

The Erie Specialty Mfg. Company, Erie, Pa., in connection with their other ice tools, milk-shakes, &c., are putting on the market the ice-plane represented in the



Walker's Handy Ice-Plane.

for use. It is thus obvious that this plane is intended to be used on a stationary cake of ice, which can be placed on a counter in a proper receptacle or in the refrigerator in a convenient position to be planed, as shown in the cut. The saving of ice by having it in large cakes instead of breaking it up, as is necessary in some other machines, is alluded to by the company, as well as the convenience and quickness of operation. It may be added that the plane has adjusting-screws at the end of the bit to regulate the depth of cut. The knife can easily be removed when necessary to sharpen it. The plane is handsomely plated and has an enameled handle.

Work on the great Forth Bridge, in England, has reached another stage by the completion of what is called the Queensferry cantilever, so that now only the bridging over of the large gap between the two sections remains to be done. The gap is still 350 feet in width, and in the course of the next three months a large hog-backed girder of that length and 50 feet in depth will connect them. The girder, which is the largest ever used in England, will weigh 800 tons.

## Legal Decisions.

### SALE—DELIVERY—CREDITORS.

B. owed F. money, and made a sale of certain cattle for the purpose of securing the debt. The transaction was made in Baltimore, Md., at 2 p.m., August 7, 1882, and the cattle left Baltimore at 4 p.m. that day, before F. could take possession of them, and he did not get possession of the cattle until they arrived at Jersey City, where they were delivered to him on B.'s order. After F. was in possession and had fed and watered the cattle, the sheriff of Hudson County, on the suit of a New Jersey creditor, attached the cattle as for the debt of a non-resident creditor. F. then sued the sheriff to recover the value of the property, and recovered in full. This case on appeal—*Cronan vs. Fox*—was affirmed by the Court of Errors and Appeals of New Jersey. Judge Depue, in the opinion, said: "This sale was a chattel mortgage only, and by the laws of Maryland, no possession being given and the mortgage not having been recorded, the mortgage was void as to creditor. But possession was given in this State before the attachment was levied, unless the Maryland law declaring the transaction void between the mortgagor and mortgagee, which it does not do, but on the contrary declares the opposite, the cattle were legally in F.'s possession. For by our law a sale followed by an immediate delivery and actual change of possession, as was done here on the arrival of the cattle, is in conformity with our Chattel Mortgage act. The question must be determined by the law of this State, not by the law of Maryland, as the process by which the sheriff seeks to hold the cattle is a New Jersey process which only can be sustained if in conformity with the law of New Jersey."

### USURY—LOAN MADE—COMMISSIONS PAID.

M. wanted to borrow \$400, and he applied to N. & B., brokers, at Atlanta, Ga., through their correspondent, L., at Gainesville, Ga., for the loan, agreeing to pay N. & B. \$80 for getting the money for him. N. & B. negotiated the loan through the C. Banking Company, New York, which got it from a London corporation, the plaintiff below. The loan, \$400, was paid to the C. Banking Company, and through N. & B. and L. that amount less the \$80, the agreed commission, was paid to M. He failed to pay the note and an action was brought to foreclose the security, to which he pleaded usury. He was defeated, and he carried the case to the Supreme Court of Georgia, where he was again beaten. The Chief Justice, Bleckley, in the opinion, said: "N. & B. were middlemen in making this loan; they were neither borrowers nor lenders, but were seekers for both. Their business was a lawful one, and they had as much right to pursue it for profit as a merchant, or farmer, or lawyer has to attend to his own lawful affairs for his legitimate gains. They could make what terms they pleased, and they could share their profits as they pleased with their business allies. In this case they had two associates; there were three middlemen. M. must pay here. If he had sought to obtain this loan by correspondence his expense would have been light, and the loan too, in all probability. The truth is that a person, by enlisting others in his service, especially if they have superior knowledge, skill, standing, experience and influence, can often accomplish through them what no exertions of his own will ever achieve. Call N. & B.'s business what you will, say that it was lobbying the money market, still it was their regular business, and M. must pay the agreed price for their services. They were authorized to retain the commission

out of the loan, and that payment of \$320 to M. was the full payment to him of the loan."

### SALE—AGREED PRICE.

G. agreed to supply R. with feed for his horses at \$20 a ton while he was working for him under a contract to cut, haul and bark about 1,000,000 feet of pine logs. G. bought the feed from C. & Co., and paid for it, it seems, but \$18 a ton, but claimed \$20 a ton in settling with R. A dispute arose, and R. sued on the contract for his work on the logs and refused to allow \$20 a ton for the feed. On the trial of the case R. admitted that the feed was to cost \$20 a ton, but evidence was admitted to show that but \$18 was paid to C. & Co. by G., and both parties gave evidence to show what the feed was actually worth. When the case was closed the defendant insisted that as the plaintiff had admitted that the feed was to cost \$20 a ton the jury should be instructed to allow that sum in fixing the liability on the contract. The judgment was carried to the Supreme Court of Wisconsin, where Judge Orton, for the court, in the opinion said: "The plaintiff must also prevail here. It does not appear that the parties intended that they should take the statement of the plaintiff on the trial as to the price to be paid for the feed as conclusive, and that they put in evidence, both of them, of the value of the feed, and that but \$18 a ton was actually paid by G. to C. & Co. for the feed. Under such circumstances it does not seem to have been improper for the court to leave the whole question of the value or price of the feed to the jury. That was certainly fair and just, and the jury could take into consideration the admission, if any, with the other testimony to determine what the plaintiff ought to pay for the feed."

### TAXATION OF NEW YORK CORPORATIONS.

The decision just rendered by the Court of Appeals (first division) in the case of the People *ex rel.* Fairfield Chemical Company *vs.* The Commissioners of Taxes and Assessments of the City of New York is of general interest to taxpayers in this State. The court holds that the provisions of Chapter 456, Laws of 1857, Section 3, which directs that in assessing capital stock of corporations for purposes of taxation the assessed value of real estate should be deducted from the actual value of capital stock, apply to real estate situated without the State of New York as well as to that within. The Chemical Company are a manufacturing corporation organized under the laws of New York, with a capital of \$150,000. Their entire capital stock was issued for their plant in Connecticut. The Tax Commissioners valued the capital at \$75,000 for 1888, and from this valuation deducted the assessed value of the company's real estate in Connecticut, \$42,400, leaving a taxable balance of \$32,600. The company claimed that the actual value of the real estate, measured by the amount of stock issued therefor, should be deducted, which would have left nothing for taxation here. On *certiorari* proceedings the Supreme Court at Special Term sustained the view of the relator and ordered the assessment canceled. This order was affirmed by the General Term last March. The Court of Appeals reverses both decisions and directs that the assessment be reinstated. This decision is regarded by the Tax Commissioners as of great importance, as there are many corporations organized under the laws of New York owning valuable real property in other States. It has been customary for these companies to claim a deduction equal to the amount paid for such property, and in the absence of other information the price paid has been held a proper allowance. (Panama Railroad case, 104 N. Y., 240.) The difference between the assessed value and purchase

price of real property in other States is so great that the assessments of capital stock of New York corporations will be materially increased, under the decision just rendered, wherever the assessed value can be ascertained. The precise question now finally settled has not been passed upon before.

Thomas James, assistant superintendent of the Edgar Thomson Steel Works, of Carnegie Brothers & Co., Limited, at Braddock, Pa., has just been granted a patent on an important invention. It is a self-stamper, for stamping rails, and is worked by the machinery of the hot-saws. It is about 1 foot square and fits in the curbers. A groove containing steel type in the shape of a semicircle runs over the top of the apparatus, to which is connected a spring, which is struck every time a rail is run out, and the type on the under side is dropped and the semicircle turns over, completely stamping the rail. As can be seen, when it turns over it relapses to its former position, and so on. It is a very intricate piece of work, and it has occupied the attention of Mr. James for over a year. It does away with the stampers, and the terrible heat it occasioned them; all that is now required in connection with it being the changing of the type at the proper time. The stampers received \$6 per day. The machine was first put in operation last week at the Edgar Thomson Works, and after a few trials was found to work successfully. It is now being operated continuously. Mr. James is the inventor of the ingot-stripper, used for the stripping of ingots from the molds in the converting department as soon as they have been poured.

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## CURRENT HARDWARE PRICES.

JULY 10, 1889.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers' prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers' name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers, at the figures named.

## Ammunition.—

Caps, Percussion, 1000—	
Hicks & Goldmark's	
F. L. Waterproof, 1-10's	50¢
E. B. Trimm'd Edge, 1-10's	25¢
E. B. Grnd. Edge, Cent. Fire	25¢
1-10's, 70¢	7½¢
Double Waterproof, 1-10's	\$1.40
Musket Waterproof, 1-10's	50¢
G. D.	28¢
S. B.	30¢
Union Metallic Cartridge Co.	
F. C. Trimm'd	50¢
F. L. Ground	25¢
Cent. Fire Ground	25¢
Db'l. Waterproof	\$1.40
Db'l. Waterproof, in 1-10's	\$1.40
S. B. Genuine Imp.orted	45¢
Eley's E. B.	54¢
Eley's D. Waterproof, Cent. Fire	\$1.60
Cartridges.	
Rim Fire Cartridges	50¢ & 52¢
Rim Fire Military	15¢ & 2¢
Cent. Fire, Pistol and Rifle	25¢ & 52¢
Cent. Fire, Military and Sporting	15¢ & 52¢
Blank Cartridges, except 22 and 32 cal., additional 10% on above discounts.	
Blank Cartridges, 22 cal.	\$1.75
Blank Cartridges, 32 cal.	\$3.50
Primed Shells and Bullets	15¢ & 52¢
B. B. Caps, Round Ball	\$1.75
B. B. Caps, Con. Ball, Swgd.	\$2.00
Primers—	
Berdan Primers	\$1.00
B. L. Caps (for Sturtevant Shells)	\$1.00
All other Primers	\$1.20
Shells—	
First quality, 4, 8, 10 and 12 gauge	25¢ & 10¢
First quality, 14, 16 and 20 gauge (10 list)	30¢ & 10¢
Star, Club, Rival and Climax	20¢ & 10¢
Seibold's Comb. Shot Shells	15¢ & 2¢
Brass Shot Shells, 1st quality	60¢ & 2¢
Brass Shot Shells, Club, Rival, Climax	65¢ & 2¢
I. X. L. 10 and 12 gauge	40¢ & 52¢
"Special," 10 and 12 gauge	30¢ & 10¢
"Special," 10 and 12 gauge	40¢ & 10¢
Fowler's Pat.	\$3.25
Shells Loaded—	
A. M. Co. List No. 19, 1887	40¢ & 10¢
Wads—	
U. M. C. & W. R. A.—B. E., 11 up	\$2.00
U. M. C. & W. R. A.—B. E., 9&10	2.30
U. M. C. & W. R. A.—B. E., 7&8	2.00
U. M. C. & W. R. A.—P. E., 11 up	3.10
U. M. C. & W. R. A.—P. E., 9&10	4.00
U. M. C. & W. R. A.—P. E., 7&8	4.90
Eley's B. E., 11 up	\$1.75
Eley's B. E., 11 up	2.80
Anvils.—	
Eagle Anvil, 10" & 10"	20¢ & 20¢
Peter Wright's	95¢
Armitage's Mouse Hole, Extra	84¢
Armitage's Mouse Hole, Extra	11¢
Trenton	9¢ & 10¢
Wilkinson's	9¢ & 10¢
J. & Riley Carr, Pat. Solid	11¢ & 11¢
Moore & Barnes Mfg. Co.	33¢ & 3¢
Anvil Vise and Drill—	
Millers Falls Co.	\$18.00
Cheney Anvil and Vise	25¢
Allen Anvil and Vise	\$5.00
Apple Pavers—	
Advance	10¢ doz \$4.75
Antrim Combination	10¢ doz 5.50
Baldwin	10¢ doz 5.25
Champion	10¢ doz 7.25
Daisy	10¢ doz 3.75
Eureka, 1888	10¢ doz 17.00
Family Bay State	10¢ doz 12.00
Favorite	10¢ doz 5.00
Gem	10¢ doz 5.00
Gold Medal	10¢ doz 4.00
Ideal	10¢ doz 4.00
Improved Bay State	10¢ doz 30.00
Little Star	10¢ doz 4.00
Monarch	10¢ doz 13.50
New Lightning	10¢ doz 5.50
Oriole	10¢ doz 4.00
Penn.	10¢ doz 4.00
Perfection	10¢ doz 4.00
Pomona	10¢ doz 4.00
Rocking Table	10¢ doz 5.25
Turntable	10¢ doz 4.50
Victor	10¢ doz 13.50
Waverly	10¢ doz 4.00
White Mountain	10¢ doz 4.50
72	10¢ doz 4.25
76	10¢ doz 5.75
78	10¢ doz 6.50
Augers and Bits—	
Douglas Mfg. Co.	
Wm. A. Ives & Co.	70%
Humphreysville Mfg. Co.	
French, Swift & Co. (F. H. Beecher, Rockford Bit Company)	
Cook's, Douglas Mfg. Co.	55%
Cook's, N. H. Copper Co.	50¢ & 10¢
Ives' Circular Lip	60%
Patent Solid Head	50%
C. E. Jennings & Co., No. 10, extension	
Up	40%
C. E. Jennings & Co., No. 30	60%
C. E. Jennings & Co., Auger Bits, 1/2 set, 32½ quaters, No. 5, 8; No. 30, \$3.50, 20%	
Lewis' Patent Single Twist	55%
Jennings' Augers and Bits	25%
Imitation Jennings' Bits	60¢ & 50¢
Pugh's Black	20%
Rockford, Jennings' Pattern	60%
Car Bits	50¢ & 10¢
L. Hommedieu Car Bits	15¢ & 10¢
Forstner Pat. Auger Bits	10%

## Hollow Augers—

Ives'	33½¢
French, Swift & Co.	33½¢
Bonney's Adjustable, 1/2 doz \$48	40¢ & 10%
Stearns'	20¢ & 10%
Ives' Expansive, each \$4.50	50¢ & 5%
Universal Expansive, each \$4.50	20%
Wood's	25¢ & 25¢ & 10%

## Expansive Bits—

Clarks' small, 1/8; large, 3/16	35¢ & 35¢ & 5%
Ives' No. 4, 1/2 doz \$90	40%
Swan's	40%
Stearns' No. 1, \$20; No. 2, \$22	35%
Stearns' No. 2, \$48	20%

## Gimlet Bits—

Common	1/2 gross \$2.75 & \$3.25
Diamond	1/2 doz \$1.10
Bee	25¢ & 25¢
Double Cut, Sheppardson's	45¢ & 45¢ & 10%
Double Cut, Ct. Valley Mfg. Co.	30¢ & 10%
Double Cut, Hartwell's, 1/2 gross	85¢
Double Cut, Douglas'	40¢ & 10%
Double Cut, Ives'	60¢ & 60¢ & 10%

## Bit Stock Drills—

Morse Twist Drills	50¢ & 10¢ & 5%
Standard	50¢ & 10¢ & 5%
Cleveland	50¢ & 10¢ & 5%
Syracuse, for metal (wood list)	30¢ & 30¢ & 5%
Williams' or Holt's, for metal	50¢ & 10¢ & 10%
Williams' or Holt's, for wood	40¢ & 10%

## Ship Augers and Bits—

L'Hommiedieu's	15¢ & 10¢ & 15¢ & 10¢ & 5%
Watrous'	15¢ & 10¢ & 15¢ & 10¢ & 10%
Snell's	15¢ & 10¢ & 15¢ & 10¢ & 5%
Snell's Ship Auger Pat'tn Car Bits	15¢ & 10¢ & 15¢ & 10¢ & 5%

## Awl Hafts—

Sewing, Brass Fer. 1/2 gr, \$3.50	45¢ & 10%
Pat. Sewing, Short, \$1.00 1/2 doz	40¢ & 10%
Pat. Sewing, Long	40¢ & 10%
Pat. Peg, Plain Top, 1/2 gr \$10.00	45¢ & 10%
Pat. Peg, Leather Top, 1/2 gr \$12.00	45¢ & 10%

## Awls, Brad Sets, &amp;c—

Awls, Sewing, Common 1/2 gr \$1.70, 35%	
Awls, Should. Peg, 1/2 gr \$2.45, 40¢ & 40¢ & 10%	
Awls, Pat. Peg, 1/2 gr \$3.00, 40¢ & 40¢ & 10%	
Awls, Shouldered Brad, 2 7/8 1/2 gr	35%
Awls, Handled Brad, 1/2 gr \$7.50, 35¢ & 10%	
Awls, Handled Scratch 1/2 gr, \$7.50, 35¢ & 10%	
Awls, Socket Scratch, 1/2 gr, \$10.25 & 30%	

## Awl and Tool Sets—

Alken's Sets, Awls and Tools	
No. 20, 1/2 doz \$10.00	55¢ & 10%
Fray's Adj. Tool Hdl's, Nos. 1, 1 1/2; 2, 1 1/2; 3, 1 1/2; 4, 80	25¢ & 25¢ & 10%
Miller's Falls Adj. Tool Hdl's	
No. 1, 1 1/2, 2, \$18	25%
Henry's Combination Haft, 1/2 doz \$6.50	
Brad Sets	
No. 42, \$10.50; No. 43, \$12.50, 70¢ & 10¢ & 5%	
Stanley's Excelsior	
No. 1, \$7.50; No. 2, \$4.00; No. 3, \$5.50	30¢ & 10%

## Axes—

## Makers' and Special Brands—

First quality	10¢ doz \$6.00 & \$6.50
Others	10¢ doz \$5.50 & \$6.75

## Axle Grease—

Fraser's	10¢ Keg 1/2 1/2, Pall 1/2 1/2 5¢
Fraser's, in boxes	10¢ gr \$9.50
Fraser's Everlasting, in bxs.	10¢ doz 1 1/2
No. 1, 2 1/2; 2, 2 1/2	\$1.20; 2 1/2 \$2.00
Dixon's Everlasting	10¢ 10¢ palls, ea. 85¢
Lower grades, special brands	
	10¢ gr \$5.50 & \$7.00

## Axles—

No. 1	4¢ & 4¢ 1/2, No. 2 5¢ & 5¢ 1/2
Nos. 7 to 14	7¢ & 7¢ 1/2
Nos. 15 to 18	47¢ & 5%
Nos. 19 to 22	70%
National Tubular Self-Oiling Standard	
Farm (1 to 5) and Special Farm (A1 to A5)	
Less than 10 sets	33½¢
Over 10 sets	33½¢ & 5%

## Bag Holders—

Spangle's Pat.	10¢ doz \$18
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## Balances—

Spring Balances	50%
Common 24" 1/2 doz \$1.50	50%
Chattillon's Spring Balances	50%
Chattillon's Circular Spring Balances	60%

## Bells—

## Hand—

Light Brass	70¢ & 10¢ @ 75%
Extra Heavy	60¢ & 10¢
White Metal	60¢ & 10¢ & 10%
Silver China	33½¢ & 10%
Globe (Cone's Patent)	25¢ & 10¢ & 35%

## Door—

Gong, Abbe's	33½¢ & 10%
Gong, Yankee	46¢ & 10%
Gong, Barton's	40¢ & 10¢ & 50%
Gong, Taylor's	25¢ & 10%
Crank Brooks	50¢ & 10¢ & 2%
Crank, Cone's	10%

Crank, Connel's	20¢ & 10%
Lever, Sargent's	60¢ & 10%
Lever, Taylor's Bronzed or Plated	net
Lever, Taylor's Japanned	25¢ & 10%
Lever, R. E. M. Co.'s	50¢ & 10¢ & 2%
Pull, Brevok's	50¢ & 10¢ & 2%
Pull, Western	25¢ & 10%

## Cone—

Common Wrought	60¢ & 10%
Western	20¢ & 10%
Western, Sargent's list	70¢ & 10%
Kentucky, "Star"	30¢ & 10%
Kentucky, Sargent's list	70¢ & 10%
Dodge, Genuine Kentucky	70¢ & 70¢ & 10%
Texas Star	50¢ & 10¢ & 50¢ & 10¢ & 5%
Call	40¢ & 40¢ & 5%
Farm Bells	10¢ & 3¢ & 3¢ & 4%
Steel Alloy Church and School Bells	40%

## Bellows—

Blacksmiths'	60¢ & 60¢ & 5%
Molders'	40¢ & 40¢ & 10%
Hand Bellows	40¢ & 10¢ & 50%

## Belting, Rubber—

Common Standard	70¢ & 10%
Standard	70¢ & 70¢ & 5%
Extra	60¢ & 50¢ & 10%
N. Y. B. & P. Co., Carbon	60¢ & 10¢ & 5%
N. Y. B. & P. Co., Diamond	50¢ & 10%

## Bench Stops—

Morrill's	1/2 doz \$9, 50%
Hotchkiss's	1/2 doz \$5, 10¢ & 10¢ & 10%
Weston's, No. 1, \$10; No. 2, \$9.25 & 10¢ & 5%	
McGill's	1/2 doz \$3

## Bits—

Auger, Gimlet, Bit Stock, Drills, &c., see Augers and Bits.	
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## Bit Holders—

Extension	
Barber's, 1/2 doz \$15.00	40¢ & 40¢ & 10%
Ives, 1/2 doz \$20.00	60¢ & 50¢ & 10%
Diagonal	1/2 doz \$24.00, 40%
Angular	1/2 doz \$24.00, 40¢ & 5%

## Blind Adjusters—

Domestic	1/2 doz \$3.00, 33½%
Excelsior	1/2 doz \$10.00
Washburn's Self-Locking	20¢ & 20¢ & 10%

## Blind Fasteners—

Mackrell's	1/2 doz \$1.00
Van Sand's Screw Pat.	\$15 1/2 gr, 60¢ & 10%
Van Sand's Old Pat.	\$15.00 1/2 gr, 55¢ & 10%
Washburn's Old Pattern	1/2 gr, \$9.00
Merriman's	new list
Austin & Eddy No. 3008	1/2 gr, \$9.00
Security Gravity	1/2 gr, \$9.00

## Blind Staples—

Barbed, 1/2 in. and larger	1/2 doz 7½¢ & 8¢
Barbed, 3/4 in.	1/2 doz 8½¢ & 9¢

## Blocks—

Ordinary Tackle, list May 20, 1889	40¢ & 10¢ & 50%
Cleveland Block Co., Mal. Iron	50%
Moore's Novelty, Mal. Iron	50%

## Bolts—

## Door and Shutter—

Cast Iron Barrel, Square, &c.	70¢ & 70¢ & 10%
Cast Iron Shutter Bolts	70¢ & 70¢ & 10%
Cast Iron Chain (Sargent's list)	65¢ & 10%
Ives' Patent Door Bolts	60%
Wrought Barrel	70¢ & 70¢ & 10%
Wrought Square	70¢ & 70¢ & 10%
Wrt Shutter, all Iron, Stanley's	60¢ & 10%
Wrt Shutter, Brass Knob	40¢ & 10%
Wrt Shutter, Sargent's list	60¢ & 10%
Wrt Sunk Flush, Sargent's list	55¢ & 10%
Wrt Sunk Flush, Stanley's list	50¢ & 10%
Wrt B.K. Flush, Com'n	55¢ & 10%

## Carriage, Machine, &amp;c.—

Com. list June 10, '84	75¢ & 10¢ & 2%
Genuine Eagle, list Oct. '84	75¢ & 10%
Phila. pattern, list Oct. '84	75¢ & 10%
R.B. & W., old list	75¢ & 10¢ & 5%
Machine, according to size	75¢ & 10¢ & 80%
Bolt Ends, according to size	75¢ & 10¢ & 80%

## Tire—

Common, list Feb. 28, '83	70%
Port Chester Bolt and Nut Company	
Empire, list Feb. 28, '83	70%
Phila., list Oct. '84	82½%
Keystone, Philadel., list Oct. '84	80%
Norway, Phila., list Oct. '84	75¢ & 10%
American Screw Company	
Norway, Phila., list Oct. 16, '84	75¢ & 10%
Eagle, Phila., list Oct. 16, '84	80%
Philadel., list Oct. 16, '84	82½%
Bay State, list Feb. 28, '83	70%
R.B. & W., Philadel., list Oct. 16, '84	82½%

## Stone and Plow—

Stove	65%
Flow	60¢ & 5%
R. B. & W., Plow	55%

## Borax—

1/2 doz 9½¢ & 10½¢	
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## Boring Machines—

Without	
Augers	Upright, Angular.
Douglas	\$5.50 \$6.75
Snell's, Rice's Pat.	5.50 6.75, 40¢ & 10¢ & 10%
Jennings	5.50 6.75, 45¢ & 45¢ & 10%
Other Machines	2.35 2.75
Phillips' Patent	
with Augers	00 7.50

## Bow Pins—

Humason, Beckley & Co.'s	60¢ & 10%
Sargent & Co.'s	\$17 and \$18, 60¢ & 10%
Peck, Stow & W. Co.	50¢ & 10¢ & 50¢ & 10¢ & 5%

## Braces—

Barber's	
Nos. 10 to 16.....	50%
Nos. 30 to 33.....	50%
Nos. 40 to 63.....	50¢ 10%
Barker's	
Nos. 8, 10 and 12.....	75¢ 10¢ 80%
Plated, Nos. 8, 10 and 12.....	65¢ 10¢ 70%
Osgood's Ratchet.....	40¢ 10¢ 50%
Spofford's.....	50¢ 50¢ 10%
Ives' New Haven Novelty.....	70¢ 70¢ 5%
New Haven Ratchet.....	60¢ 50¢ 10%
Barber Ratchet.....	60¢ 50¢ 10%
Barbers.....	60¢ 5%
Spofford.....	60¢ 50¢ 10%
Common Ball, American.....	\$1.00 & \$1.10
Bartholomew's	
Nos. 27, 27 and 30.....	50¢ 10¢ 60¢ 5%
Nos. 117, 118, 119.....	70¢ 70¢ 5%
Amidon's	
Barker's Imp'd Plated.....	75¢ 10 & 20%
Barker's Imp. Nickle'd.....	85¢ 10¢ 70 & 5%
Ratchet.....	75¢ 10¢ 80%
Eclipse Ratchet.....	60%
Globe Jawed.....	40¢ 10¢ 10%
Corner Brace.....	40¢ 40¢ 10%
Universal, 8 In. \$2.10; 10 In.....	\$2.25 15%
Buffed Ball.....	50¢ 10%
P. S. & W.....	50¢ 10%

**Cards—**

Horse & Curry.....10¢10¢10¢10¢  
 Cotton.....10¢10¢10¢  
 Wool.....10¢10¢10¢

**Carpet Stretchers—**

Cast Steel, Polished.....\$ doz \$2.25  
 Cast Iron, Steel Points.....\$ doz \$2.00  
 Socket.....\$ doz \$1.75  
 Bullard's.....25¢25¢10¢

**Carpet Sweepers—**

Bissell No. 5.....\$ doz \$17.00  
 Bissell No. 7 New Drop Pan.....\$ doz \$19.00  
 Bissell, Grand.....\$ doz \$22.00  
 Grand Rapids.....\$ doz \$24.00  
 Crown Jewel, No. 2.....\$19.00; No. 3, \$20.00  
 Jewel.....\$ doz \$17.00

Magie.....\$ doz \$15.00  
 Improved Parlor Queen.....\$ doz \$27.00  
 Nickel.....\$ doz \$24.00  
 Excelsior.....\$ doz \$22.00  
 Garland.....\$ doz \$18.00  
 Parlor Queen.....\$ doz \$24.00  
 Housewife's Delight.....\$ doz \$15.00  
 Queen.....\$ doz \$16.00  
 Queen, with band.....\$ doz \$18.00  
 King.....\$ doz \$22.00  
 Weed, Improved.....\$ doz \$18.00  
 Hub.....\$ doz \$16.00  
 Cog-Wheel.....\$ doz \$22.00  
 Conqueror.....\$ doz \$22.00  
 Easy.....\$ doz \$22.00  
 Goshen.....\$ doz \$21.00  
 Advance.....\$ doz \$18.00  
 Ladies' Friend, No. 1, \$ doz, \$15.00;  
 No. 2.....\$ doz \$16.00  
 American.....\$ doz \$15.00  
 Grand Republic.....\$ doz \$35.00

Cartridges—  
 See Ammunition.

**Casters—**

Bed.....\$ Brass.....55¢55¢10¢  
 Plate.....\$ Others.....60¢60¢10¢  
 Shallow Socket.....40¢10¢  
 Deep Socket.....40¢10¢  
 Yale Casters, list May, 1884.....30¢10¢40¢  
 Yale, Gem.....60¢60¢5¢  
 Martin's Patent (Phoenix).....45¢10¢5¢  
 Payson's Anti-Friction.....60¢60¢10¢  
 Giant Truck Casters.....50¢10¢  
 Stationary Truck Casters.....50¢10¢  
 Socket Truck Casters.....50¢

**Cattle Leaders—**

Humason, Beckley & Co.'s.....70¢  
 Sargent's.....60¢5¢10¢  
 Hotchkiss.....30¢  
 Peck, Stow & W. Co.....50¢10¢

**Chain—**

Trace, 6-10-2, exact.....\$ pair \$1.03.....50¢10¢50¢10¢5¢  
 Trace, 6-10-3, exact.....\$ pair \$2.00.....50¢10¢50¢10¢5¢  
 Trace, 7-10-2, exact.....\$ pair \$1.11.....50¢10¢50¢10¢5¢  
 NOTE—Traces, "Regular" sizes, 3¢ net  
 \$ pair less than exact.

Log, Fifth, Stretcher, and other fancy  
 Chains, list Nov. 1, 1884  
 50¢10¢50¢10¢5¢

American Coll, in cask lots,  
 3-16 1/4 5-16 3/4 7-16 1/2 4-10 4-10 3-7 3-50  
 Less than cask lots, add 1/4¢ per lb.  
 German Coll, list of June 20, 1887  
 50¢10¢50¢10¢5¢

German Halter Chain, list of June 20,  
 1887.....50¢10¢50¢10¢5¢  
 Covert Halter, Hitching and Breast  
 50¢25¢  
 Covert Traces.....35¢25¢  
 Oneida Halter Chain.....60¢60¢5¢  
 Galvanized Pump Chain.....75¢75¢5¢  
 Jack Chain, Iron.....75¢75¢5¢  
 Jack Chain, Brass.....70¢70¢5¢

**Chalk—**

White.....\$ gr 50¢  
 Red.....\$ gr 70¢  
 Blue.....\$ gr 85¢  
 See also Crayons.

**Chalk Lines—****See Lines.****Chisels—**

Socket Framing and Firmer.  
 P. S. & W.....75¢10¢ @ 75¢  
 New Haven.....75¢10¢ @ 75¢  
 Witherby.....10¢5¢  
 Ohio Tool Co.....75¢75¢5¢  
 Douglass.....60¢10¢60¢10¢5¢  
 Buck Bros.....30¢  
 Merrill.....30¢30¢5¢  
 L. & I. J. White.....30¢30¢5¢

Tanged and Miscellaneous.  
 Tanged Firmers.....40¢10¢50¢  
 Butchers.....\$4.75¢85.00  
 Spear & Jackson's.....\$5 to \$2  
 Buck Bros.....16¢19¢  
 Cold Chisels, \$ 16¢19¢

**Chucks—**

Beach Pat.....each, \$8.00.....20¢  
 Morse's Adjustable, each, \$7.00, 20¢20¢5¢  
 Danbury.....each, \$6.00, 30¢30¢5¢  
 Syracuse, Balz Pat.....25¢  
 Skinner's Pat. Drill Chucks.....30¢  
 Skinner's Independent Lathe Chucks.....40¢  
 Skinner's Pat. Comb. Chuck.....40¢

**Clamps—**

R. I. Tool Co.'s Wrought Iron.....25¢  
 Adjustable, Gray's.....20¢  
 Adjustable, Lambert's.....20¢  
 Adjustable, Snow's.....40¢5¢  
 Adjustable, Hammer.....15¢  
 Adjustable, Stearn's.....20¢10¢  
 Stearn's Adjustable Cabinet and Cor-  
 ner.....20¢10¢  
 Cabinet, Sargent's.....60¢10¢  
 Carriage Makers', Sargent's.....70¢10¢  
 Eberhard Mfg. Co.....40¢10¢40¢10¢5¢  
 Warner's.....40¢10¢40¢10¢5¢  
 Saw Clamps, see Vises

**Clips—**

Norway Axle, 1/2 & 5-16.....55¢55¢5¢  
 2nd grade Norway Axle, 1/2 & 5-16.....65¢5¢  
 Superior Axle Cls.....45¢40¢5¢  
 Norway Spring Bar Clips, 5-16.....60¢55¢5¢  
 Wrought-Iron Felloe Clips.....\$ 5¢  
 Steel Felloe Clips.....\$ 5¢  
 Baker Axle Clips.....25¢

**Cockeyes.....50¢****Cocks, Brass.**

Hardware list.....40¢10¢25¢

**Coffee Mills—**

Box and Side, list Jan. 1, 1888.....60¢25¢  
 American, Enterprise Mfg Co.....30¢10¢30¢  
 The Swift, Lane Bros.....20¢10¢

**Compasses Dividers, &c—**

Compasses, Calipers, Dividers.....70¢10¢10¢  
 Bemis & Call Co's.....60¢5¢  
 Dividers.....50¢5¢  
 Compasses & Calipers.....50¢5¢  
 Wing and Inside or Outside.....50¢5¢  
 Double.....60¢  
 (Call's Pat. Inside).....30¢  
 Excelsior.....50¢  
 J. Stevens & Co.'s.....25¢10¢  
 Starrett's.....25¢10¢

Spring Calipers and Dividers.....25¢10¢10¢  
 Lock Calipers and Dividers.....25¢10¢  
 Combination Dividers.....25¢10¢

**Coopers' Tools—**

Bradley's.....20¢  
 Barton's.....20¢20¢5¢  
 L. & J. White.....20¢5¢  
 Albertson Mfg. Co.....20¢5¢  
 Beatty's.....30¢  
 Sandusky Tool Co.....30¢30¢5¢

**Corkscrews—**

Humason & Beckley Mfg. Co.....40¢10¢10¢  
 Clough's Pat.....35¢35¢5¢  
 Howe Bros & Hulbert.....35¢

**Cork Knives and Cutters—**

Bradley's.....10¢  
 Wadsworth's.....25¢

**Cradles—**

Grain.....50¢25¢

**Crayons.**

White Crayons, \$ gr 12¢@12¢.....10¢  
 D. M. Stewart Mfg. Co., Metal Work-  
 ers, \$ gr, \$2.50.....25¢  
 D. M. Stewart Mfg. Co., Rolling Mill,  
 \$ gr, \$2.50.....25¢  
 See also Chalk.

**Crow Bars—**

Cast Steel.....\$ 4¢  
 Iron, Steel Points.....\$ 3¢

**Curry Combs—**

Fitch's.....50¢10¢50¢10¢10¢  
 Rubber per doz \$10.00.....20¢  
 Perfect.....50¢

**Curtain Pins—**

Silvered Glass.....net  
 White Enamel.....net

**Cutlery—**

Beaver Falls & Booth's.....35¢  
 Wostenholme.....\$7.75 to \$2

**Dampers, &c—**

Dampers, Buffalo.....40¢10¢  
 Buffalo Damper Clips.....40¢10¢  
 Crown Damper.....40¢  
 Excelsior.....40¢10¢

**Dividers—**

See Compasses.

**Dog Collars—**

Embossed, Gilt, Pope & Steven's list  
 30¢10¢  
 Leather, Pope & Steven's list.....40¢  
 Brass, Pope & Steven's list.....40¢

**Door Springs—**

Torrey's Rod, regular size.....\$ doz \$1.30  
 Gray's, \$ gr, \$20.00.....20¢  
 Bee Rod \$ gr, \$20.00.....20¢  
 Warner's No. 1, \$ doz, \$2.50; No. 2,  
 \$3.30.....40¢10¢50¢  
 Gem (Coll), list April 19, 1886.....10¢  
 Star (Coll), list April 19, 1886.....20¢  
 Victor (Coll).....60¢60¢10¢  
 Champion (Coll).....60¢10¢60¢10¢10¢  
 Philadelphia, 5 in., \$5.00; 8 in., \$7.75.....  
 Cowell's.....No. 1, \$ doz, \$18.00; No. 2,  
 \$15.00.....50¢  
 Rubber, complete, \$ doz, \$4.50.....55¢10¢  
 Hercules.....50¢  
 Shaw Door Check and Spring.....25¢30¢35¢

**Drawing Knives—**

Witherby.....75¢10¢ @ 75¢10¢  
 Mix.....&5¢  
 New Haven.....60¢10¢60¢10¢5¢  
 Watrous.....15¢10¢25¢  
 L. & I. J. White.....20¢5¢  
 Bradley's.....35¢  
 Adjustable Handle.....25¢35¢  
 Wilkinson's Folding.....25¢25¢5¢

**Drills and Drill Stocks—**

Blacksmiths'.....each \$1.75  
 Blacksmiths' Self-Feeding, each \$7.50, 20¢  
 Breast, P. S. & W.....40¢10¢  
 Breast, Wilson's.....30¢5¢  
 Breast, Millers Falls.....each \$3.00, 25¢  
 Breast, Bartholomew's.....each \$2.50,  
 25¢10¢40¢  
 Ratchet, Merrill's.....20¢20¢5¢  
 Ratchet, Ingersoll's.....25¢  
 Ratchet, Parker's.....20¢20¢5¢  
 Ratchet, Whitney's.....20¢10¢  
 Ratchet, Weston's.....20¢25¢  
 Ratchet, Moore's Triple Action.....25¢30¢  
 Ratchet, Curtis & Curtis.....30¢  
 Whitney's Hand Drill, Plain.....\$11.00,  
 Adjustable, \$12.00.....20¢10¢  
 Wilson's Drill Stocks.....10¢  
 Automatic Boring Tools.....\$1.75¢1.85

**Twist Drills—**

Morse.....50¢10¢5¢  
 Standard.....50¢10¢5¢  
 Syracuse (Metal list).....50¢10¢5¢  
 Cleveland.....50¢10¢5¢  
 Williams.....50¢10¢10¢  
 New Process.....50¢10¢5¢

**Drill Bits.—See Augers and Bits****Drill Chucks.—See Chucks.****Dripping Pans—**

Small sizes.....\$ 6¢  
 Large sizes.....\$ 6¢

**Egg Beaters.**

Dover.....\$ doz \$1.50  
 National, \$ doz \$4.50.....35¢5¢  
 Family (T. & S. Mfg. Co.), \$ gro \$17.00,  
 \$18.00

Duplex (Standard Co.).....\$ gro \$15.00  
 Rival (Standard Co.).....\$ gro \$12.00  
 Large Duplex (Standard Co.).....\$ doz \$4.50  
 Triumph (T. & S. Mfg. Co.), \$ gro \$10.50

Advance, No. 1.....\$ gro \$11.50  
 Advance, No. 2.....\$ gro \$10.00  
 Bryant's.....\$ gro \$15.00  
 Ayres' Spiral.....\$ gro \$5.00  
 Double (H. & R. Mfg. Co.).....\$ gro \$16.20  
 Easy (H. & R. Mfg. Co.).....\$ gro \$14.00  
 Triple (H. & R. Mfg. Co.).....\$ gro \$16.20  
 Spiral (H. & R. Mfg. Co.).....\$ gro \$4.50  
 Paine, Diehl & Co.'s.....\$ gro \$24.00

**Egg Poachers—**

Buffalo Steam Egg Poachers, \$ doz, No.  
 1, \$6.00; No. 2, \$9.00.....25¢

**Electric Bell Sets.—**

Wollensak's.....20¢  
 Bigelow & Dowse.....20¢

Emery—No. 4 to No. 54 to Flour CF  
 40 gr. 150 gr. F FF.  
 Kegs, \$ 4¢ 5¢ 2¢  
 1/2 kegs, \$ 4¢ 5¢ 2¢  
 1/4 kegs, \$ 5¢ 5¢ 3¢  
 10-b cans, 10¢ 6¢ 5¢  
 10-b cans, less  
 than 10.....10¢ 10¢ 7¢

Enamelled and Tinned Ware—  
 See Hollow-Ware.

**Escutcheon Pins—**

Iron, list Nov. 11, 1885.....50¢10¢50¢10¢5¢  
 Brass.....60¢60¢5¢

**Escutcheons.**

Door Locks.....Same dis as Door Locks.  
 Brass Thread.....60¢60¢10¢  
 Wood.....25¢

**Faucets.—**

Fenn's.....40¢  
 Bohren's Pat. Rubber Ball.....25¢  
 Fenn's Cork Stops.....33¢5¢  
 Starr's.....60¢  
 Frary's Pat. Petroleum.....40¢5¢2¢  
 B. & L. B. Co.

West's Lock, Open and Shut Key.....50¢  
 Star, Metal Plug, new list.....40¢  
 Lockport, Metal Plug, reduced list.....60¢  
 Metallic Key, Leather Lined.....60¢10¢  
 Cork Lined.....70¢5¢70¢10¢  
 Burnside's Red Cedar.....50¢  
 Burnside's Red Cedar, bbl lots.....50¢10¢  
 John Sommers'

Peerless Best Block Tin Key.....40¢  
 Bohren's quality, Cork Lined.....50¢  
 Diamond Lock.....50¢  
 Perfection, Fla. Red Cedar.....50¢  
 Goodenough Cedar.....50¢  
 Boss Metallic Key.....50¢  
 Reliable Cork Lined.....60¢  
 Western Pattern Cork Lined.....50¢

Self-Measuring  
 Enterprise, \$ doz \$50.00.....20¢10¢  
 Lane's, \$ doz \$36.00.....25¢10¢  
 Victor, \$ doz \$36.00.....25¢10¢

**Felloe Plates.—**

Derby and Cincinnati.....45¢5¢

**Files—**

Domestic—  
 Nicholson Files, Rasps, &c.....60¢10¢60¢10¢5¢  
 Nicholson (X. F.) Files.....25¢  
 Nicholson's Rural Files (seconds).....75¢  
 (extra prices on certain sizes)  
 Other makers, best brands.....60¢10¢60¢10¢10¢  
 Fair brands.....60¢10¢60¢10¢70¢  
 Second quality.....70¢10¢75¢10¢  
 Nicholson's Horse Rasps.....60¢10¢60¢  
 Heller's Horse Rasps.....50¢7¢50¢10¢  
 McCaffrey's Horse Rasps.....50¢10¢  
 Chelsea Horse Rasps, Hand Cut.....50¢10¢

Imported—  
 J. & Riley arr.....list, April 1, 1883, 15¢  
 J. & Riley Carr Fire Rasps.....10¢  
 Moss & Gamble.....list, April 1, 1883, 15¢  
 Butcher.....Butcher's list, 20¢  
 Stubbs.....Stubbs list, 25¢30¢  
 Turton's.....Turton's list, 20¢25¢  
 Greaves' Horse Rasps, American list, 60¢

**Fluting Machines—**

Knox, 1/4-inch Rolls.....\$3.25 each 35¢  
 Knox, 5/8-inch Rolls.....\$3.00 each 40¢  
 Eagle, 3/4-inch Roll, \$2.15.....35¢  
 Eagle, 5/8-inch Roll, \$2.85.....35¢  
 Crown, 1/4 in., \$3.50; 5/8 in., \$4.00; 8 in.,  
 \$6.50 each.....35¢  
 Crown Jewel, 6 in.....\$3.50 each, 35¢  
 American, 5 in., \$3.00; 6 in., \$3.40; 7 in.,  
 \$4.50 each.....35¢  
 Domestic Fluter.....each, \$1.50  
 Geneva Hand Fluter, White Metal  
 \$ doz \$12, 25¢  
 \$12.50; 3, \$10.00.....30¢  
 Shepard Hand Fluter, No. 86 \$ doz  
 \$15.30.....40¢  
 Shepard Hand Fluter, No. 110 \$ doz  
 \$11.00.....40¢  
 Shepard Hand Fluter, No. 95 \$ doz  
 \$8.00.....40¢  
 Clark's Hand Fluter, \$ doz \$15.00.....35¢  
 Combined Fluter and Sad Iron.....35¢  
 Buffalo.....\$ doz \$10.00.....10¢

**Fluting Scissors—**

Blair's.....\$ doz \$2.00  
 Blair's "Climax".....\$ doz \$1.25

**Forks—**

Hay, Manure, &c., Asso. list.....65¢  
 Hay, Manure, &c., Phila. list 60¢60¢5¢  
 Plated, see Spoons.

**Freezers, Ice Cream—**

Buffalo Champion.....65¢65¢5¢  
 Shepard's Lightning.....65¢ @ 65¢5¢  
 White Mountain.....50¢20¢5¢  
 New Arctic.....50¢40¢5¢  
 American.....50¢  
 Gem.....70¢  
 Blizzard.....60¢  
 Double Action Crown.....60¢  
 Crown.....60¢  
 Star.....60¢  
 Peerless and Giant.....60¢10¢  
 Zero and Fet.....65¢10¢  
 Boss.....65¢10¢10¢

**Fruit and Jelly Presses—**  
 Enterprise Mfg. Co.....20¢10¢30¢  
 Henis.....\$ doz \$2.50  
 Shepard's Queen City.....40¢

**Fry Pans—**

High list.....75¢5¢75¢10¢  
 No.....2 4  
 \$ doz, \$3.75 \$4.70 \$5.30 \$5.95 \$6.55  
 No.....5 6 7 8  
 \$ doz, \$7.50 \$8.75 \$10.00 \$11.25  
 Low list.....1 2 3 4  
 \$ doz, \$3.00 \$3.75 \$4.25 \$4.75 \$5.25  
 No.....5 6 7 8  
 \$ doz.....\$6.00 \$7.00 \$8.00 \$9.00

**Fuse—**

Common Hemp Fuse, for dry ground, \$2.70  
 Common Cotton Fuse, for dry ground, 2.85  
 Single Taped Fuse, for wet ground, 4.25  
 Double Taped Fuse, for very wet gr., 5.40  
 Triple Taped Fuse, for very wet gr., 6.50  
 Small Gutta Percha Fuse, for water, 7.50  
 Large Gutta Percha Fuse, for water, 12.00

**Gauges—**

Marking, Mortise, &c.....60¢10¢  
 Starrett's Surface, Center and Scratch,  
 25¢10¢  
 Wire, low list.....10¢10¢  
 Wire, Wheeler, Madden & Co.....10¢  
 Wire, Morse's.....50¢50¢5¢  
 Wire, Brown & Sharpe's.....10¢20¢

**Gimlets—**

Nail and Spike.....50¢10¢5¢  
 "Eureka" Gimlets.....40¢10¢  
 "Diamond" Gimlets.....\$ gr \$5.00  
 Double Cut, Shephardson's.....45¢45¢5¢  
 Double Cut, Ives.....60¢60¢5¢  
 Double Cut, Douglas'.....40¢10¢  
 "Bee," \$ gr \$12.....25¢25¢5¢

**Glue—**

Le Page's Liquid.....25¢25¢5¢  
 Upton's Liquid.....35¢  
 Le Page & Co.'s Improved Process  
 25¢25¢5¢

**Glue Pots—**

Tinned.....40¢  
 Enamelled.....40¢  
 Family, Howe's "Eureka".....40¢  
 Family, L. F. C.'s "Handy".....50¢

**Grindstones—**

Small, at factory.....\$ ton \$7.50@9.00

**Grindstone Fixtures—**

Sargent's Patent.....70¢10¢  
 Reading Hardware Co.....30¢10¢

**Hack Saws.—****See Saws.****Halters—**

Covert's, Rope, 1/2-in. Jute.....50¢25¢  
 Covert's, Rope, 1/2-in. Hemp.....40¢25¢  
 Covert's Adj. Rope Halters.....40¢25¢  
 Covert's Hemp Horse and Cattle Tie,  
 60¢10¢25¢

**Hammers—**

Handled Hammers—  
 Maydole's, list Dec. 1, '85.....25¢10¢35¢  
 Buffalo Hammer Co., list Jan. 15, '87  
 Humason & Beckley.....50¢50¢10¢  
 Atha Tool Co.....40¢10¢50¢  
 Fayette R. Plumb  
 C. Hammond & Son.....40¢10¢50¢  
 Verree.....5¢  
 Magnetic Tack, Nos. 1, 2, 3, \$1.25, 1.50 &  
 1.75.....30¢10¢  
 Nelson Tool Works.....40¢10¢  
 Warner & Nobles.....20¢25¢  
 Peck, Stow & Wilcox.....33¢10¢  
 Sargent's.....33¢10¢

Heavy Hammers and Sledges—  
 3 lb and under.....\$ 40¢ 60¢10¢  
 3 to 5 lb.....\$ 30¢ 40¢ 10¢ 70¢  
 Over 5 lb.....\$ 30¢ 40¢ 10¢ 70¢  
 Wilkinson's Smiths.....10¢6¢11¢7¢

**Handcuffs and Leg Irons—**  
 R. I. Tool Co., Handcuffs, \$15.00 \$ doz 10¢  
 R. I. Tool Co., Leg Irons, \$25.00 \$ doz 10¢  
 Tower's.....25¢  
 Daley's Improved Handcuffs: 2 Hands,  
 Polished, \$ doz \$48.00; Nickelled,  
 \$57.00; 3 Hands, Polished, \$ doz  
 \$72.00; Nickelled, \$84.00.....25¢

**Handles—**

Iron, Wrought or Cast—  
 Door or Thumb



## Cross-Cut Saw Handles—

Atkins' No. 1 Loop, pair, 28¢; No. 3, 18¢; No. 6, 16¢; No. 2 and No. 4 Reversible, 15¢.  
 Boynton's Loop Saw Handles, 50¢.

Champion, 15¢.

## Hangers—

Barn Door, old patterns, 60¢; 10¢; 10¢; 70¢.  
 Barn Door, New England, 60¢; 10¢; 70¢.  
 Samson Steel Anti-Friction, 55¢.  
 Orleans Steel, 55¢.  
 Hamilton Wrought Wood Track, 55¢.  
 U. S. Wood Track, 65¢.  
 Champion, 60¢; 10¢.  
 Rider and Wooster, Medina Yfg. Co.'s list, 70¢.  
 Climax Anti-Friction, 60¢.  
 Climax Anti-Friction for Wood Track, 55¢.  
 Zenith for Wood Track, 55¢.  
 ed's Steel Arm, 50¢.  
 Challenge, Barn Door, 50¢.  
 Sterling's Improved (Anti-Friction), 65¢; 10¢.  
 Victor, No. 1, \$15.00; No. 2, \$16.50; No. 3, \$18.00; No. 4, \$20.00; No. 5, \$22.00; No. 6, \$24.00; No. 7, \$26.00; No. 8, \$28.00; No. 9, \$30.00; No. 10, \$32.00; No. 11, \$34.00; No. 12, \$36.00; No. 13, \$38.00; No. 14, \$40.00; No. 15, \$42.00; No. 16, \$44.00; No. 17, \$46.00; No. 18, \$48.00; No. 19, \$50.00; No. 20, \$52.00; No. 21, \$54.00; No. 22, \$56.00; No. 23, \$58.00; No. 24, \$60.00; No. 25, \$62.00; No. 26, \$64.00; No. 27, \$66.00; No. 28, \$68.00; No. 29, \$70.00; No. 30, \$72.00; No. 31, \$74.00; No. 32, \$76.00; No. 33, \$78.00; No. 34, \$80.00; No. 35, \$82.00; No. 36, \$84.00; No. 37, \$86.00; No. 38, \$88.00; No. 39, \$90.00; No. 40, \$92.00; No. 41, \$94.00; No. 42, \$96.00; No. 43, \$98.00; No. 44, \$100.00; No. 45, \$102.00; No. 46, \$104.00; No. 47, \$106.00; No. 48, \$108.00; No. 49, \$110.00; No. 50, \$112.00; No. 51, \$114.00; No. 52, \$116.00; No. 53, \$118.00; No. 54, \$120.00; No. 55, \$122.00; No. 56, \$124.00; No. 57, \$126.00; No. 58, \$128.00; No. 59, \$130.00; No. 60, \$132.00; No. 61, \$134.00; No. 62, \$136.00; No. 63, \$138.00; No. 64, \$140.00; No. 65, \$142.00; No. 66, \$144.00; No. 67, \$146.00; No. 68, \$148.00; No. 69, \$150.00; No. 70, \$152.00; No. 71, \$154.00; No. 72, \$156.00; No. 73, \$158.00; No. 74, \$160.00; No. 75, \$162.00; No. 76, \$164.00; No. 77, \$166.00; No. 78, \$168.00; No. 79, \$170.00; No. 80, \$172.00; No. 81, \$174.00; No. 82, \$176.00; No. 83, \$178.00; No. 84, \$180.00; No. 85, \$182.00; No. 86, \$184.00; No. 87, \$186.00; No. 88, \$188.00; No. 89, \$190.00; No. 90, \$192.00; No. 91, \$194.00; No. 92, \$196.00; No. 93, \$198.00; No. 94, \$200.00; No. 95, \$202.00; No. 96, \$204.00; No. 97, \$206.00; No. 98, \$208.00; No. 99, \$210.00; No. 100, \$212.00; No. 101, \$214.00; No. 102, \$216.00; No. 103, \$218.00; No. 104, \$220.00; No. 105, \$222.00; No. 106, \$224.00; No. 107, \$226.00; No. 108, \$228.00; No. 109, \$230.00; No. 110, \$232.00; No. 111, \$234.00; No. 112, \$236.00; No. 113, \$238.00; 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<b>Machine—</b>	
Flat Head, Iron.....	55¢
Round Head, Iron.....	50¢
<b>Bench and Hand—</b>	
Bench, Iron.....	55¢10¢55¢10¢10¢
Bench, Wood, Hickory.....	7¢ doz 82.25
Bench, Wood, Hickory.....	20¢10¢
Hand, Wood, Hickory.....	25¢10¢25¢10¢
Lat, Blunt Point.....	75¢75¢10¢
Coach and Lag, Gimlet Point.....	75¢
Bed.....	25¢5¢
Hand Rail, Sargent's.....	60¢10¢
Hand Rail, H. & B. Mfg. Co.....	70¢10¢75¢
Hand Rail, Am. Screw Co.....	75¢
Jack Screws, Millers Falls list.....	30¢40¢5¢
Jack Screws, P. S. & W.....	35¢
Jack Screws, Sargent.....	60¢10¢60¢10¢5¢
Jack Screws, Stearns.....	40¢40¢10¢

<b>Scroll Saws—</b>	
Lester, complete, \$10.00.....	25¢
Rogers, complete, \$4.00.....	25¢
Barnes' Builders' and Cabinet Makers'.....	15¢
Barnes' Scroll Saw Blades.....	35¢

<b>Seythe Snaths—</b>	50¢2¢
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<b>Shears—</b>	
American (Cast) Iron.....	75¢10¢75¢10¢5¢
Pruning, See Pruning Hooks and Shears	
Barnard's Lamp Trimmers.....	7¢ doz \$3.75
Tinners'.....	20¢2¢
Seymour's, List, Dec. 1881.....	60¢10¢10¢60¢10¢10¢5¢
Heinisch's, List, Dec. 1881.....	33¢
First quality C. S. Trimmers.....	80¢80¢10¢
Second quality C. S. Trimmers.....	80¢10¢80¢10¢10¢

<b>Acme Cast Shears.....</b>	10¢10¢
<b>Diamond Cast Shears.....</b>	10¢
<b>Clipper.....</b>	10¢
<b>Victor Cast Shears.....</b>	75¢10¢75¢10¢5¢
<b>Howe Bros. &amp; Hulbert, Solid Forged Steel.....</b>	40¢
<b>Chicago Drop Forge &amp; F. Co., Solid Steel Forged.....</b>	60¢
<b>Clauss Shear Co., Jan. 1889.....</b>	70¢
<b>Clauss Shear Co., Nickeled, same list.....</b>	60¢

<b>Sheaves—</b>	
<b>Sliding Door—</b>	
M. W. Co., list July, 1888.....	50¢10¢60¢5¢
R. & E., list Dec. 18, 1885.....	55¢20¢
Corbin's list.....	60¢10¢2¢
Patent Roller.....	60¢10¢2¢
Patent Roller, Hatfield's.....	75¢
Russell's Anti-Friction, list Dec. 18, 1885.....	60¢2¢
Moore's Anti-Friction.....	50¢

<b>Sliding Shutter—</b>	
R. & E., list Dec. 18, 1885.....	60¢10¢2¢
Sargent's list.....	60¢10¢
Reading list.....	60¢10¢10¢

<b>Ship Tools—</b>	
L. & J. White.....	20¢5¢
Albertson Mfg. Co.....	25¢

<b>Shoes, Horse, Mule, &amp;c.—</b>	
<b>Horse—</b>	
Burden's, Perkins', Phoenix, at factory.....	\$4.00

<b>Mule—</b>	
Add \$1 1/2 keg to above prices.	
<b>Or, Wrought—</b>	
Ton lots.....	7¢ 10¢
1000 lb lots.....	7¢ 10¢
500 lb lots.....	7¢ 10¢

<b>Shot—</b>	
(Eastern prices 2¢ off, cash, 5 days.)	
Drop, 7 bag, 25 lb.....	\$1.25
Drop, 7 bag, 5 lb.....	.30
Buck and Chilled, 7 bag.....	1.50
Buck and Chilled, 5 lb bag.....	.35

<b>Shovels and Spades—</b>	
Ames' Shovels, Spades, &c., list Nov. 1, 1885.....	20¢
NOTE.—Jobbers frequently give 5¢ to 7¢ extra on above.	
Griffith's Black Iron.....	50¢10¢
Griffith's C. S. R. B. Goods.....	60¢60¢10¢
Griffith's Solid C. S. R. B. Goods.....	20¢
Old Colony (Sanford Fork & Tool Co.).....	20¢
St. Louis Shovel Co.....	20¢20¢75¢
Hussey, Hinns & Co.....	15¢25¢
Hubbard & Co.....	20¢20¢75¢
Lehigh Mfg. Co.....	50¢10¢
Payne Pettibone & Son, list January, 1886.....	30¢
Remington's (Lowman's) Pat. 30¢10¢40¢	
Rowland's, Black Iron.....	50¢10¢
Rowland's Steel.....	60¢5¢60¢10¢

<b>Shovels and Tongs—</b>	
Iron Head.....	60¢10¢60¢10¢5¢
Brass Head.....	60¢10¢10¢

<b>Skins, Thimble—</b>	
Western list.....	75¢5¢75¢10¢
Columbus Wrt. Steel, list Nov. 1, 1887.....	20¢
Coldbrookdale Iron Co.....	50¢10¢
Utica F. S. T. Skins.....	60¢
Utica Turned and Fitted.....	35¢

<b>Sieves—</b>	
Buffalo Metallic, S. S. & Co.....	50¢25¢10¢
Shaker (Barler's) Pat. Flour Sifters.....	7¢ doz \$2.00, 7¢ gr \$2.10
Electric.....	7¢ gr \$1.80, 10¢
Hunter's.....	7¢ gr \$2.10, 10¢
Smith's Adjustable Sifters.....	7¢ doz \$2.00
Smith's Adjustable Milk Strainer.....	7¢ doz \$2.00
Smith's Adjustable T. & C. Strainer.....	7¢ doz \$1.25

<b>Sieves, Wooden Rim—</b>	
Mesh 18, Nested, 7 doz.....	70¢ 90¢
Mesh 20, Nested, 7 doz.....	85¢ 1.00
Mesh 24, Nested, 7 doz.....	1.00 1.10

<b>Snaps, Harness, &amp;c.—</b>	
Anchor (T. & S. Mfg. Co.).....	65¢
Fitch's (Bristol).....	50¢10¢
Hutchinson's.....	10¢
Andrews.....	50¢
Sargent's Patent Guarded.....	70¢10¢10¢
German, new list.....	40¢10¢
Covert.....	50¢2¢
Covert, New Patent.....	50¢5¢2¢
Covert, New R. E.....	60¢2¢
Covered Spring.....	60¢10¢10¢

<b>Soldering Irons—</b>	
Covert's Adjustable, list Jan. 1, 1886.....	35¢2¢

<b>Spoke Shaves—</b>	
Iron.....	45¢
Wood.....	30¢
Bailey's (Stanley R. & L. Co.).....	40¢10¢
Stearns.....	20¢10¢30¢

<b>Spoke Trimmers—</b>	
Bonney's.....	7¢ doz \$10.00, 50¢
Stearns.....	20¢10¢
Ives', No. 1, \$15.00; No. 2, \$12.00; 7¢ doz.....	55¢10¢
Douglas.....	7¢ doz \$9.00, 20¢

<b>Spoons and Forks—</b>	
<b>Tinned Iron—</b>	
Basting, Cen. Stamp, Co.'s list.....	70¢10¢
Solid Table and Tea, Cen. Stamp, Co.'s list.....	70¢10¢
Buffalo S. S. & Co.....	33¢10¢
Silver-Plated—(4 mos. or 5¢ cash 30 days.)	

<b>Morden Brit. Co., Rogers.....</b>	50¢
<b>C. Rogers &amp; Bros.....</b>	50¢
<b>Rogers &amp; Bro.....</b>	50¢
<b>Reed &amp; Barton.....</b>	50¢
<b>Wm. Rogers Mfg. Co.....</b>	50¢10¢60¢
<b>Simpson, Hall, Miller &amp; Co.....</b>	50¢10¢
<b>Holmes &amp; Edwards Silver Co.....</b>	50¢10¢
<b>L. Boardman &amp; Son.....</b>	50¢10¢

<b>Miscellaneous.</b>	
Holmes & Edwards Silver Co.....	50¢10¢
No. 67 Mexican Silver.....	50¢10¢
No. 30 Silver Metal.....	50¢10¢
No. 24 German Silver.....	50¢10¢
No. 50 Nickel Silver.....	50¢10¢
No. 49 Nickel Silver.....	50¢10¢
German Silver.....	50¢50¢5¢
German Silver, Hall & Elton.....	50¢5¢
Nickel Silver.....	50¢5¢50¢10¢5¢
Britannia.....	90¢

<b>Boardman's Nickel Silver.....</b>	50¢
<b>Boardman's Britannia Spoons, case.....</b>	60¢

<b>Springs—</b>	
Elliptic, Concord, Platform and Half Scroll.....	60¢60¢5¢
Cliff's Bolster Springs.....	25¢

<b>Squares—</b>	
Steel and Iron.....	75¢10¢80¢
Nickel-Plated.....	75¢10¢80¢
Try Square and T Bevels.....	60¢10¢60¢10¢

<b>Disston's Try Square and T Bevels.....</b>	45¢10¢
<b>Winterbottom's Try Square and T Bevels.....</b>	30¢10¢
<b>Starrett's Micrometer Caliper Squares.....</b>	25¢
<b>Avery's Flush Bevel Squares.....</b>	25¢
<b>Avery's Bevel Protractor.....</b>	50¢

<b>Standard Fibre Ware—</b>	
Per Dozen.	Plain. Dec'd
Wash-Basins, 10 1/2 in.....	\$2.00 \$2.25
Wash-Basins, 12 in.....	2.25 2.75
Keelers, 1 1/2 in.....	4.00
Cupboards.....	4.00
Spitcoons, "Daisy," 8 in.....	4.00 4.50
Peck Measure.....	4.00
Half-peck Measure.....	3.50
See also Pails.	

<b>Staples—</b>	
Fence Staples, Galvanized.....	Same price as B & B Wire.
Fence Staples, Plain.....	See Trl. Rep.

<b>Steel Yards.....</b>	40¢10¢50¢
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<b>Stocks and Dies—</b>	
Blacksmith's.....	30¢5¢30¢10¢
Butterfield's Goods.....	30¢5¢30¢10¢
Lightning Screw Plate.....	25¢30¢
Reece's New Screw Plates.....	33¢5¢40¢
Reversible Ratchet.....	30¢

<b>Stone—</b>	
Hindustan No. 1, 3¢; Axe, 3 1/2¢; Slips No. 1, 4 1/2¢	
Sandstone.....	30¢ 2 1/2¢
Washita Stone, Extra.....	10¢ 10¢20¢
Washita Stone, No. 1.....	14¢15¢
Washita Stone, No. 2.....	10¢11¢
Washita Slips, No. 1, Extra.....	30¢35¢
Washita Slips, No. 1.....	24¢25¢
Arkansas Stone, No. 1, 4 to 6 in.....	\$1.50
Arkansas Stone, No. 1, 6 to 9 in.....	\$1.85
Turkey Oil Stone, 4 to 8 in.....	40¢
Turkey Slips.....	\$1.00 \$1.50
Lake Superior, Chase.....	10¢
Lake Superior Slips, Chase.....	31¢32¢
Seneca Stone, Red Paper Brand.....	18¢20¢

<b>Seneca Stone, High Rounds.....</b>	20¢25¢
<b>Seneca Stone, Small Whets.....</b>	24¢

<b>Stone Polish—</b>	
Joseph Dixon's.....	7¢ gr \$6.00, 10¢
Gem.....	7¢ gr \$4.50, 10¢
Gold Medal.....	7¢ gr \$6.00, 25¢
Mirror.....	7¢ gr \$6.00, —
Lustro.....	7¢ gr \$4.75
Ruby.....	7¢ gr \$5.75
Rising Sun, 5 gr 10 lb.....	\$5.50
Dixon's Plumbago.....	7¢ 10¢
Boynton's Noon Day.....	13¢
Parlor Pride Stove Enamel.....	7¢ gr 8 cans
Yates' Liquid, 2 3 5 10 gal.....	8¢
Yates Standard Paste Polish, 10 lb cans.....	15¢

<b>Jet Black.....</b>	7¢ gr \$3.50
<b>Japanese.....</b>	7¢ gr \$3.50
<b>Fireside.....</b>	7¢ gr \$2.50
<b>Diamond O. K. Enamel.....</b>	7¢ gr \$1.00
<b>Bonnett's Liquid Stove Polish.....</b>	7¢ gr \$6.00
<b>Bonnett's Paste Stove Polish.....</b>	7¢ gr \$6.00
<b>Black Eagle Benzine Paste, 5 and 10 lb cans.....</b>	12¢
<b>Black Jack Water Paste, 5 and 10 lb cans.....</b>	12¢
<b>Nickel Plate Paste.....</b>	7¢ gr \$6.00

<b>Tacks, Brads, &amp;c.—</b>	
List, Jan. 2, 1888.—[Note.—Some manufacturers are selling Tacks at slightly higher prices than those named.]	
American Iron Carpet.....	80¢80¢5¢
Steel Carpet.....	80¢80¢5¢
Swedes Iron Carpet.....	80¢80¢5¢
American Iron Cut.....	75¢75¢10¢
Swedes Iron, Upholsterers'.....	75¢10¢80¢

<b>Tinned Swedes Iron.....</b>	75¢10¢80¢
<b>Tinned Swedes Iron, Upholsterers'.....</b>	75¢10¢80¢
<b>Gimp and Lace.....</b>	75¢10¢80¢
<b>Tinned Gimp and Lace.....</b>	75¢10¢80¢
<b>Swedes Iron Trimmers.....</b>	75¢10¢75¢10¢5¢
<b>Swedes Iron Miners'.....</b>	75¢10¢75¢10¢5¢
<b>Swedes Iron Bill Posters' or Railroad.....</b>	75¢10¢75¢10¢5¢

<b>Swedes Steel (Swedes Iron price list),</b>	
80¢80¢5¢	

<b>Copper Tacks.....</b>	50¢10¢
<b>Copper Finishing, Trunk and Clout Nails.....</b>	50¢10¢
<b>Finishing Nails.....</b>	70¢10¢70¢10¢5¢
<b>Trunk and Clout Nails.....</b>	70¢10¢70¢10¢5¢
<b>Tinned Trunk and Clout Nails.....</b>	70¢10¢
<b>Basket Nails.....</b>	70¢10¢70¢10¢5¢
<b>Common and Patent Brads.....</b>	70¢10¢70¢
<b>Hungarian Nails.....</b>	70¢10¢70¢10¢5¢
<b>Chair Nails.....</b>	70¢10¢70¢10¢5¢
<b>Zinc Glaziers' Points.....</b>	50¢50¢5¢
<b>Clear Box Nails.....</b>	50¢10¢50¢10¢5¢
<b>Picture-Frame Points.....</b>	50¢10¢50¢10¢5¢
<b>Looking-Glass Tacks.....</b>	50¢10¢50¢10¢5¢
<b>Leathered Carpet.....</b>	50¢10¢50¢10¢5¢
<b>Brush Tacks.....</b>	50¢10¢50¢10¢5¢
<b>Shoe Finders', List Jan. 2, 1888.....</b>	10¢10¢
<b>Lining and Saddle Nails, List Jan. 1, 1888.....</b>	30¢10¢10¢
<b>Silvered.....</b>	20¢10¢10¢
<b>Japanned.....</b>	20¢10¢10¢
<b>Double-Pointed Tacks.....</b>	85¢
<b>Wire Carpet Nails.....</b>	50¢10¢
<b>Wire Brads &amp; Nails, see Nails, Wire.</b>	
<b>Steel-Wire Brads, R. &amp; E. Mfg. Co.'s list.....</b>	50¢10¢

<b>Tap Borers—</b>	
Common and Rind.....	20¢10¢
Ive's Tap Borers.....	35¢5¢
Enterprise Mfg. Co.....	20¢10¢30¢
Clark's.....	33¢5¢35¢

<b>Tapes, Measuring—</b>	
American.....	25¢10¢
Smith.....	40¢
Chesterman's, Regular list.....	25¢30¢

<b>Thermometers—</b>	
Tin Case.....	80¢80¢10¢

<b>Thimble Skins—See Skins.</b>	
<b>Ties, Bale—Steel</b>	
Standard Wire, list.....	50¢10¢5¢

<b>Tinners' Shears, &amp;c.—</b>	
Shears and Snips (P. S. & W.).....	20¢25¢
Punches, see Punches.....	
Snips, J. Mallinson & Co.....	33¢4¢

<b>Tinware—</b>	
Stamped, Japanned and Plated, list Jan. 20, 1887.....	75¢75¢5¢

<b>Tire Benders, Upsetters, &amp;c.—</b>	
Stoddard's Lightning Tire Upsetters.....	15¢
Detroit Perfect Tire Bender.....	15¢

<b>Tobacco Cutters—</b>	
Champion.....	20¢10¢30¢
Wood Bottom.....	7¢ doz \$5.00 to \$5.25
All Iron.....	7¢ doz \$4.25
Nashua Lock Co.'s.....	\$18.00 50¢5¢
Wilson's.....	55¢
Sargent's.....	7¢ doz, \$24, 55¢10¢
Acme.....	7¢ doz, \$20.00, 40¢

<b>Transom Lifters—</b>	
Wollensak's.....	50¢
Class 3 and 4, Bronze Iron.....	50¢
Class 3 and 4, Bronze Metal.....	25¢
Class 3 and 4, Brass.....	35¢
Skylight Lifters.....	35¢
Crown, Eagle and Shield.....	50¢
Reiber's, list Jan. 1, 1887.....	50¢10¢2¢
Bronzed Iron Rods.....	50¢10¢2¢
Brass, Real Bronze or Nickel Plate.....	30¢
Excelsior.....	50¢10¢2¢
Payson's Universal.....	40¢40¢10¢

<b>Traps—</b>	
<b>Game—</b>	
Newhouse.....	35¢40¢5¢
Oneida Pattern.....	70¢70¢8¢
Game, Blake's Patent.....	40¢10¢5¢
<b>Mouse and Rat—</b>	
Mouse, Wood, Chisel.....	7¢ doz \$1.50, 10¢
Mouse, Cage, Wire.....	7¢ doz \$2.50, 10¢
Mouse, Catch-em-alive.....	7¢ doz \$2.50, 15¢
Mouse, Bonanza.....	7¢ gr \$10.00
Mouse Delusion.....	7¢ gr \$15.00
Rat, Decoy.....	7¢ gr \$10.00, 10¢
Ideal.....	7¢ gr \$10.00
Cyclone.....	7¢ gr \$5.25
Hotchkiss Metallic Mouse, 5-hole traps.....	7¢ doz 90¢
In full cases.....	7¢ doz 75¢

<b>Trowels—</b>	
Lothrop's Brick and Plastering.....	25¢25¢5¢
Reed's Brick and Plastering.....	15¢
Dixson's Br'k and Plastering.....	25¢25¢10¢
Peace's Plastering.....	25¢
Clement & Maynard's.....	20¢
Rose's Brick.....	25¢
Brade's Brick.....	25¢
Worral's Brick and Plastering.....	20¢
Garden.....	70¢

<b>Triers—</b>	
Butter and cheese.....	25¢

<b>Trucks, Warehouse, &amp;c.—</b>	
B. & L. Block Co.'s list, '82.....	40¢

<b>Tubes, Boiler—</b>	
See Pipe.....	

<b>Twine—</b>	
Flax Twine.....	BC. R.
No. 9, 1/4 and 1/2 lb Balls.....	22¢ 30¢
No. 12, 1/4 and 1/2 lb Balls.....	21¢ 20¢
No. 18, 1/4 and	

# CURRENT METAL PRICES.

JULY 10, 1889.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market reports.

## IRON AND STEEL.

### Bar Iron from Store.

Common Iron:	
1 to 2 in. round and square...	1 lb 1.90 @
1 to 6 in. x 1/2 to 1 in. ....	1 lb 2.00 @ 2.10¢
Refined Iron:	
1 to 2 in. round and square...	1 lb 2.00 @ 2.10¢
1 to 4 in. x 1/2 to 1 in. ....	1 lb 2.10 @ 2.20¢
4 1/2 to 6 in. x 1/2 to 1 in. ....	1 lb 2.20 @ 2.30¢
1 to 6 in. x 1/2 and 5-16 .....	1 lb 2.30 @ 2.40¢
Rods—5/8 and 1 1/2 round and sq. ....	1 lb 2.20 @ 2.30¢
Bands—1 to 6 x 1/2 to No. 12 .....	1 lb 2.20 @ 2.30¢
"Burden Best" Iron, base price .....	1 lb 3.00 @
Burden's "H. B. & S." Iron, base price .....	1 lb 2.80 @
"Ulster" .....	1 lb 3.00 @
Norway Rods .....	1 lb 4.00 @ 5.00¢

### Merchant Steel from Store.

Open-Hearth and Bessemer Machinery, Tce Calk, Tire and Sleigh Shoe, base price in small lots .....	2 1/2¢
Best Cast Steel, base price in small lots .....	5¢
Best Cast Steel Machinery, base price in small lots .....	5¢

### Sheet Iron from Store.

Common American.	R. G. Cleaned.
10 to 16 .....	1 lb 2.75 @ 2.80¢
17 to 20 .....	1 lb 2.85 @ 3.00¢
21 to 24 .....	1 lb 3.00 @ 3.10¢
25 and 26 .....	1 lb 3.20 @ 3.50¢
27 .....	1 lb 3.35 @ 3.75¢
28 .....	1 lb 3.50 @ 4.00¢
B. R.	2d qual.
Galv'd, 14 to 20 .....	1 lb 4.50 @ 4.88¢
Galv'd, 21 to 24 .....	1 lb 4.87 1/2 @ 4.75¢
Galv'd, 25 to 26 .....	1 lb 5.25 @ 5.12¢
Galv'd, 27 .....	1 lb 5.62 1/2 @ 5.48¢
Galv'd, 28 .....	1 lb 6.00 @ 5.85¢
Patent Planchet .....	1 lb A 10¢ B, 9¢
Russia .....	1 lb 9 1/2¢ @ 10¢
American Cold Rolled B. R. ....	1 lb 5¢ @ 7¢
Craig Polished Sheet Steel .....	1 lb 8¢

### English Steel from Store.

Best Cast .....	1 lb 15¢
Extra Cast .....	1 lb 16 1/2¢
Swaged, Cast .....	1 lb 17¢
Best Double Shear .....	1 lb 15¢
Blister, 1st quality .....	1 lb 12¢
German Steel, Best .....	1 lb 10¢
2d quality .....	1 lb 9¢
3d quality .....	1 lb 8¢
Sheet Cast Steel, 1st quality .....	1 lb 14¢
2d quality .....	1 lb 13 1/2¢
3d quality .....	1 lb 12 1/2¢

## METALS.

Banca, Pigs .....	22¢
Extra Cast .....	21 1/2¢
English, Pigs .....	22¢
Straits in Bars .....	23¢

### Tin Plates.

Charcoal Plates.—Bright.	Per box.
Melyn Grade .....	1 lb 5.75 @ 6.00¢
IC, 12 x 12 .....	1 lb 6.25 @ 6.50¢
IC, 14 x 20 .....	1 lb 5.75 @ 6.00¢
IC, 20 x 28 .....	1 lb 12.00 @ 12.50¢
IX, 10 x 14 .....	1 lb 7.25 @ 7.50¢
IX, 12 x 12 .....	1 lb 7.50 @ 7.75¢
IX, 14 x 20 .....	1 lb 7.25 @ 7.50¢
IX, 20 x 28 .....	1 lb 15.00 @ 15.50¢
DC, 12 1/2 x 17 .....	1 lb 5.50 @ 5.75¢
DX, 12 1/2 x 17 .....	1 lb 7.00 @ 7.25¢
Call and Grade .....	1 lb 5.75 @ 6.00¢
IC, 12 x 12 .....	1 lb 6.00 @ 6.25¢
IC, 14 x 20 .....	1 lb 5.75 @ 6.00¢
IX, 10 x 14 .....	1 lb 7.25 @ 7.50¢
IX, 12 x 12 .....	1 lb 7.50 @ 7.75¢
IX, 14 x 20 .....	1 lb 7.25 @ 7.50¢
IX, 20 x 28 .....	1 lb 12.00 @ 12.50¢
DC, 12 1/2 x 17 .....	1 lb 4.75 @ 5.00¢
DX, 12 1/2 x 17 .....	1 lb 5.75 @ 6.00¢

### Coke Plates.—Bright.

Steel Coke.—IC, 10 x 14, 14 x 20 .....	1 lb \$4.75 @ \$5.00
10 x 20 .....	1 lb 7.25 @ 7.50
20 x 28 .....	1 lb 9.75 @ 10.25
IX, 10 x 14, 14 x 20 .....	1 lb 5.50 @ 5.75
IX, 10 x 14, 14 x 20 .....	1 lb 4.40 @ 4.60

### Charcoal Plates.—Terne.

Dean Grade.—IC, 14 x 20 .....	1 lb \$4.35 @ \$4.62 1/2
20 x 28 .....	1 lb 8.75 @ 9.25
IX, 14 x 20 .....	1 lb 5.40 @ 5.62 1/2
20 x 28 .....	1 lb 11.00 @ 11.37 1/2
Abecarne Grade.—IC, 14 x 20 .....	1 lb 4.25 @ 4.50
20 x 28 .....	1 lb 8.45 @ 9.00
IX, 14 x 20 .....	1 lb 5.25 @ 5.50
20 x 28 .....	1 lb 10.50 @ 10.80

### Tin Boiler Plates.

IX, 14 x 26 .....	1 lb \$12.50 @ \$12.75
IX, 14 x 28 .....	1 lb 12.75 @ 12.90
IX, 14 x 31 .....	1 lb 14.25 @

### Copper.

Duty: Pig, Bar and Ingot, 4¢; Old Copper, 3¢ 1/2 .....	1 lb
Manufactured (including all articles of which Copper is a component of chief value), 4 1/2 ¢ ad valorem .....	1 lb

Lake .....	1 lb 13 1/2¢
"Anchor" Brand .....	1 lb 12 1/2¢

## Sheet and Bolt.

Prices adopted by the Association of Copper Manufacturers of the United States, May 23, 1889, being quotations for all sized lots.

Not wider than	Not longer than	And longer than	Weights per square foot and prices per pound.							
			Over 64 oz.	32 to 64 oz.	16 to 32 oz.	14 to 16 oz.	12 to 14 oz.	10 to 12 oz.	8 to 10 oz.	Less than 8 oz.
80	72		30	30	30	21	23	25	26	28
80		72	30	30	30	21	23	25	26	28
86	96		30	30	30	24	24	25	29	31
86		96	30	30	30	24	25	25	30	30
48	96	96	30	30	30	24	26	27	31	31
48		96	30	30	30	25	27	28	30	30
60	96	96	30	30	30	25	27	28	31	31
60		96	30	30	30	25	27	28	31	31
84	96	96	30	30	30	25	27	28	31	31
84		96	30	30	30	25	27	28	31	31
Over 84 in. wide			32	25	...	...	...	...	...	...